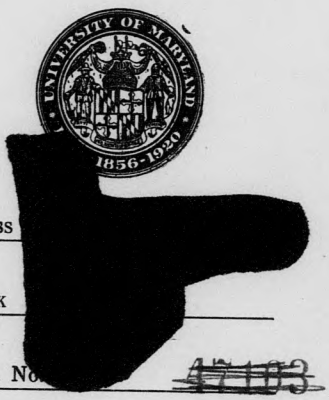
Report of The Maryland Agricultural Society, including Reports of the Horticultural Society, Crop Improvement Association, Dairymen's Association, Beekeepers' Association, The Vegetable Growers' Association and The Sheep Growers' Association : :

LIBRARY—COLLEGE PARK



CLASS

BOOK

ACC. NO. ~~47103~~

47104

No. 2.—General view of State Exhibit held in conjunction with Southern States Exhibition, Baltimore, December 8-12, 1918.

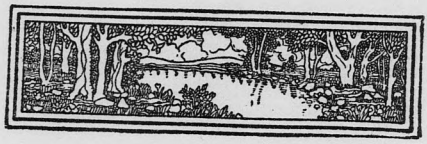
REPORT

OF THE

MARYLAND AGRICULTURAL SOCIETY

INCLUDING THE REPORTS OF

THE STATE HORTICULTURAL SOCIETY
THE CROP IMPROVEMENT ASSOCIATION
THE STATE DAIRYMEN'S ASSOCIATION
THE STATE BEEKEEPERS' ASSOCIATION
THE VEGETABLE GROWERS' ASSOCIATION
THE SHEEP GROWERS' ASSOCIATION



VOLUME III, FOR THE YEAR 1918

LIBRARY, UNIVERSITY OF MARYLAND

PUBLISHED BY THE SOCIETY, MARCH 1, 1919
Edited by T. B. SYMONS, Secretary
College Park, Md.

47104

No. 2.—General view of State Exhibit held in conjunction with Southern States Exhibition, Baltimore, December 8-12, 1918.

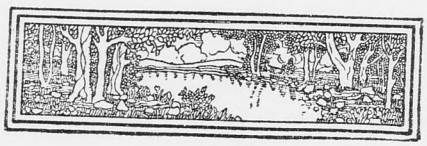
REPORT

OF THE

MARYLAND AGRICULTURAL SOCIETY

INCLUDING THE REPORTS OF

THE STATE HORTICULTURAL SOCIETY
THE CROP IMPROVEMENT ASSOCIATION
THE STATE DAIRYMEN'S ASSOCIATION
THE STATE BEEKEEPERS' ASSOCIATION
THE VEGETABLE GROWERS' ASSOCIATION
THE SHEEP GROWERS' ASSOCIATION



VOLUME III, FOR THE YEAR 1918

LIBRARY, UNIVERSITY OF MARYLAND

PUBLISHED BY THE SOCIETY, MARCH 1, 1919
Edited by T. B. SYMONS, Secretary
College Park, Md.

47104

Maryland.
S
71
.A2
v.of 3

PRESS OF
THOMAS & EVANS PRINTING CO.
217-219 GUILFORD AVENUE
BALTIMORE, MD.

LETTER OF TRANSMITTAL.

To His Excellency, Emerson C. Harrington,
Governor of Maryland:

SIR:

I herewith transmit to you, as directed by the Act incorporating the Maryland Agricultural Society, and also the Horticultural Society, this report for the year 1918, which contains a detailed statement of the receipts and expenditures of the Society, as approved by the Executive Council. It contains the proceedings of the Second Annual Meeting of the Agricultural Society, and annual meetings of the affiliated Associations.

I trust that an inspection of its contents will convince you that the funds appropriated for this purpose have been wisely and judiciously expended.

Respectfully submitted,

THOMAS B. SYMONS,
Secretary-Treasurer.

March 1st, 1919.
College Park, Md.

MARYLAND AGRICULTURAL SOCIETY

OFFICERS FOR 1919.

President—E. P. Cohill.....Hancock
Vice-President—Asa B. Gardiner.....Baltimore
Secretary—T. B. Symons.....College Park

EXECUTIVE COUNCIL.

Maryland State Horticultural Society.

A. P. Snader, President.....New Windsor
S. B. Shaw, Secretary-Treasurer.....College Park
George Morrison .....Carroll P. O.

Maryland Crop Improvement Association.

G. P. Radebaugh, President.....Bynum
J. E. Metzger, Secretary-Treasurer.....College Park
T. M. Maynadier.....Baltimore

Maryland State Dairymen's Association.

D. G. Harry, President.....Pylesville
A. P. Snader, Secretary-Treasurer.....New Windsor
I. W. Heaps.....Pylesville

Maryland State Beekeepers' Association.

Dr. J. R. Abercrombie, President.....Baltimore
E. N. Cory, Secretary-Treasurer.....College Park
Samuel J. Cushman.....Baltimore

Maryland Vegetable Growers' Association.

James T. Smith, President.....Brooklyn
A. C. Auchter, Secretary-Treasurer.....College Park
Fred L. Hurst.....Cambridge

Maryland Sheep Growers' Association.

Edw. A. Cockey, President.....Glyndon
F. B. Bomberger, Secretary-Treasurer.....College Park
Frank Mish .....Hagerstown

CHAPTER 675.

Law of Maryland, 1916.

AN ACT to incorporate the Maryland Agricultural Society, to foster the development of the agricultural resources of Maryland, and to utilize all agencies intended to further the interests of rural people and to promote the welfare of the State.

SECTION 1. *Be it enacted by the General Assembly of Maryland*, That the members of the Maryland Agricultural Society be and they are hereby incorporated under the name and style of "The Maryland Agricultural Society," consisting of the members of such organizations as provided for in its constitution, and by that name shall have perpetual succession, sue and be sued, plead and be impleaded in any court of law or equity whatsoever, and may have and use a common seal, and the same alter at pleasure.

SEC. 2. The affairs of the corporation shall be managed by an Executive Council, consisting of the President, Vice-President and Secretary-Treasurer of the Society, together with the President, Secretary and one additional member elected by each affiliated organization, and the said officers now elect shall be the first members of the Executive Council created by this Act, and shall hold their offices until their successors are duly elected in conformity with the respective constitutions of the said Associations.

SEC. 3. The said Executive Council shall have sole care and disposal of all funds appropriated by the General Assembly of Maryland for the Maryland Agricultural Society, and shall expend the same in such a manner as will, in their judgment, best promote the development of the agricultural interests of the State of Maryland. They shall render annually to the Governor of the State a detailed statement of all funds received from the State and all other sources, and also of all expenditures made by them and the specific objects for which sums were expended. They shall make no appropriations unless they have funds on hand to meet the same. The members of the said Council shall be jointly and severally liable for the payment of any debt created by the Council in the absence of funds in the treasury to meet such obligation; nor in any event shall a debt be contracted except by the concurrent vote of a quorum of the Council.

SEC. 4. The Executive Council shall, through the Secretary of the Society, render to the Governor of the State an annual report of its transactions, published at the expense of the Society, which publication shall include such reports, addresses, papers, and such other matter as said Council shall deem of value to agriculture and its allied branches.

SEC. 5. The Maryland Agricultural Society shall have power to adopt and enforce any by-laws and rules not in conflict with the Constitution and Laws of this State.

SEC. 6. *And be it enacted*, That this Act shall take effect from the first day of June, 1916.

Approved April 18th, 1916.

CONSTITUTION.

ARTICLE I—NAME.

This organization shall be known as The Maryland Agricultural Society.

ARTICLE II—OBJECT.

Its object shall be to foster and develop the agricultural resources of Maryland and to utilize all agencies intended to further the interests of rural people and to promote the welfare of the State.

ARTICLE III—OFFICERS.

SEC. 1. The officers of the Society shall be a President, a Vice-President and a Secretary-Treasurer.

ARTICLE IV—COUNCIL.

SEC. 1. The Council shall be the governing body of the Society.

SEC. 2. The Council shall consist of the President, Vice-President and Secretary-Treasurer of the Society, together with the President, Secretary and one additional member elected by each affiliated organization.

SEC. 3. The Council shall submit nominations for said officers to be elected by majority vote, at the annual meeting of the Society, at which time other nominations may be made by any member of the Society.

ARTICLE V—MEMBERSHIP.

SEC. 1. The Society shall consist of the Maryland State Horticultural Society, Maryland Crop Improvement Association, Maryland State Dairymen's Association, Maryland State Beekeepers' Association, and such other organizations, in accord with the object of the Society, and State-wide in their influence, as may be admitte by favorable vote of three-fourths of the affiiliated Associations.

SEC. 2. Organizations eligible to affiliate with the Society shall have a minimum membership of fifty, paying an annual fee of at least $1.00 per member.

SEC. 3. An organization desiring to become affiliated with this Society shall first make application to the Council, which shall investigate the eligibility of the organization. If the organization is found eligible, its application may be voted on at the first annual meeting of the affiliated Associations.

SEC. 4. All members in good standing of the affiliated organizations are members of this Society.

ARTICLE VI—AMENDMENTS.

This Constitution may be amended at any meeting of the Council by three-fourths vote, provided, that a written notice of the proposed amendment has been given to the Secretary of each of the affiliated organizations, at least thirty days prior to the meeting at which such amendment will be voted on.

BY-LAWS.

ARTICLE I—MEETINGS.

SEC. 1. There shall be one annual meeting at such time and place as shall be determined by the Council.

SEC. 2. Such other meetings of the Society as may seem desirable may be called by the Council at any time or place.

SEC. 3. The President or any five members may call a meeting of the Council.

ARTICLE II—DUTIES OF OFFICERS.

The duties of the officers shall be those which usually devolve upon such officers. In addition, the Secretary-Treasurer shall be the Executive Officer of "Maryland Week" Exhibition, and under the direction of the Council may employ such assistants as he deems necessary, manage the finances of the exhibitions, edit the proceedings, etc.

ARTICLE III—RULES.

The Council may make such rules and regulations to govern their body as are necessary to transact business, provided same is not in conflict with the Constitution.

ARTICLE IV—PUBLICATIONS.

Proceedings of the Society shall be published as an annual report. Separates of the proceedings of the respective affiliated organizations shall be furnished to the Secretaries of said organizations for distribution to their members.

CONTENTS.

	Page
Letter of Transmittal	3
Officers for 1919	4
Charter and Constitution	5
The President's Address—Orlando Harrison	10
Address—Col. Clarence Ousley	15
American Sugar for Americans—W. A. Bours	25
Report of Secretary—T. B. Symons	32
Maryland's Agricultural and Readjustment Program	35
Some Jobs That Are "Up to Us"—President A. F. Woods	38
The Rehabilitation of the Returned Soldier—Dr. H. J. Patterson	44
Tractor Experiences—L. B. Balderson	51
Our Farm Tractor—Sydney H. Karr	55
What the Tractor Can Do—Major L. W. Chase	62
Farm Machinery from the Dealers' Standpoint—W. M. Pogue	76
Experiences of Maryland Tractor Owners—F. A. Wirt	80
Report of Secretary of Horticultural Society—T. B. Symons.	86
Orchard Fertilizer Demonstrations—S. B. Shaw	96
The Fertilizer Situation for 1919—O. M. Kile	102
The Dusting Method—E. H. Siegler and John W. Roberts	110
Address by E. A. Miller, Department of Agriculture	126
Summer and Winter Pruning—C. E. Bryan	128
Address—Hon. Charles Pergler	133
The Oriental Peach Moth—E. N. Cory	138
The Importance of Purchasing Fruit Packages Early—E. P. Cohill	144
Checking Blight in the Orchards—W. E. Sangler	146
The Community Packing-house—T. L. Smith	150
Motor Trucks in the Orchard—Leo Cohill	159
Root Rot of Apple Trees—C. E. Temple	164
Report of the State Entomologist—E. N. Cory	168
Economics of Milk Production—Oscar Erf	177
Value of Cooperation—Dr. A. F. Woods	189
The Future of Dairying in Maryland—J. A. Gamble	195
The Benefits of Organization in the Marketing of Milk—Richard Pattee	197
The Making of Silage—G. E. Wolcott	208
Tuberculosis in Dairy Cows and Methods of Control—Dr. R. C. Reed	217
The Status of Beekeeping in Maryland—E. N. Cory	225
Spring Management of Bees—Samuel Cushman	228
The Crisis in American Beekeeping—G. H. Cale	234
President's Annual Address—James S. Smith	238

Wilt and Blight of Tomatoes—C. E. Temple..... 240
Cabbage—Thomas H. White..... 246
The Outlook for Trucking in Maryland—A. M. Todd..... 262
Minutes of the First Sheep Growers' Conferenec—F. B. Bomberger 267
Practical Sheep Management on Maryland Farms—E. L. Shaw 284
Address—W. L. Clark..... 295

REPORT

OF

THIRD ANNUAL MEETING

OF THE

Maryland Agricultural Society

Including

The Affiliated Associations

The third annual meeting of the Maryland Agricultural Society was held in the Assembly Room of Hotel Emerson, Baltimore, December 9th to 12th. The meeting of the Society and affiliated Associations were held in conjunction with the tenth annual meeting of the Southern Commercial Congress. The program for the week was so arranged that members of the Society could attend the important sessions of the Congress, which made its headquarters at the Emerson. Prominent men in all walks of life addressed the various sessions, the Congress furnishing prominent speakers to all agricultural meetings.

The third annual meeting proved to be the most successful in the history of the organization. The Society is indebted to the Southern Commercial Congress and its Managing-Director, Dr. Clarence J. Owens, for the many courtesies extended to its members, also to the untiring efforts of many Baltimore business men who as hosts to the visitors sought to be of every assistance in providing accommodations.

At the request of the Southern Commercial Congress the Society in cooperation with the State College installed a splendid agricultural exhibit covering 3,000 square feet in the Southern States exposition staged in the Fifth Regiment Armory. It was the intention of the Congress to have all the Southern States represented in the Exposition. War conditions interfered with the success of the Exposition.

The Maryland exhibit was unusually attractive and represented the State's agricultural resources. As in previous reports the proceedings of the Agricultural Society will be given, followed by the proceedings of the several affiliated Associations. The initial meeting of the Agricultural Society was convened Monday afternoon, December 9th, at the Emerson Hotel.

Monday, December 9th, 2 P. M., the meeting was called to order by Dr. T. B. Symons, the Secretary, who after some announcements concerning the various sessions during the conventions, introduced Senator Orlando Harrison, the President of the Society, who presided.

President's annual address by Orlando Harrison, Berlin, Md.

PRESIDENTS ANNUAL ADDRESS.

By Orlando Harrison, Berlin, Md.

Gentlemen we are meeting in conjunction with the Southern Commercial Congress and we desire the agriculturists to aid in promoting the metropolis of the state as a center of commercial activities in promoting commerce and encourage our relations with South America.

America's Opportunity Is Here.

The future is in our own hands. Through cooperation and conservation we can feed the nation economically. The whole world is one vast market.

Our success in growing more food for the past two years has been due to better organization, efficiency, energy and team work.

Farmers.

The farmers of this State andnation responded nobly when we were called on for more food. Notwithstanding the labor situation, a greater amount of food was produced in 1917 and 1918 than ever before and we are faced now to grow more food for 1919.

We are told there is a greater need for live stock raising than grain farming. Just as soon as we are able to get boats, grain will be sent in from other countries.

The world needs food and food in abundance. We must not only supply our own needs, but the needs of our Allied countries. Agriculture is the noblest of all occupations and the desire and necessity in the present food crisis is great.

Agriculture-Labor.

How are we best to utilize and improve our agricultural labor—by better housing of men, giving regular employment at good substantial wages, by using less men per acre and demand greater efficiency, by requiring ten tours per day for every able-bodied man. See to it that they are kept at work.

We must satisfy our labor on the farm first by making content our own boys and girls, by giving them a share in the profits, or let them own their own farms. Pay your children for their labor and see to it that it is saved and invested in something to encourage and improve farm life.

Boys and Girls on the Farm.

We are under a great debt of gratitude to the boys and girls for their loyal assistance in manual labor during the war period—encourage them and we will increase our food production.

Employees have thought too little of their individual responsibility to work earnestly and heartily and wholesomely recognizing that the hour wasted is an hour stolen from their employers.

Employers must recognize that the dollar saved by inadequate compensation to their employees is a dollar stolen from them. We cannot go back to old conditions. We do not want to go back to old conditions.

Agricultural work is greater than at any period in history. We are not asking for men to work on the soil for less money, but we do ask for greater efficiency from the individual himself to make good the work assigned him.

The greatest problem before American agriculturist today is to feed the nation. The American farmer can do it and will by the cooperation of the governing powers. We as farmers have increased our efficiency in cultivating the soil and growing more food.

You from the cities have induced our labor and cried aloud for cheaper food. There must be an understanding between the cities and counties—if you must have our farm boys to run your factories and conduct your business, you must pay the price it costs us who stay at home to produce the fruit and vegetables, plus a legitimate profit. You should not point with scorn to the farmer for what he receives from any one crop in a given year. Take the wholesale price on staple agricultural products for an average for a period of ten years and you would be ashamed to complain.

Producing and Marketing Crops.

Some of the problems that confront us in producing and marketing crops are:

Lack of drainage.

Lack of skilled labor.

Lack of efficient and reasonable transportation.

Lack of commercial fertilizers.

Lack of economic distribution of farm products.

We are producing; the public is wasting. It is estimated that 48% is utilized and 52% is wasted.

Wake up America.

The agriculturist has never attained a fair measure of prosperity in keeping with the prosperity of the business interests of the country. Long hours, denying themselves, drudgery, hard manual labor, has been the task of the farmer. We do not expect prices to remain as at present. We must be content with less labor and use more improved machinery and lay our plans well in advance and utilize every available help by which a maximum production of every acre of land is obtained. The day of economic farming and practice is at hand.

Labor Saving Machinery.

The growing importance of labor-saving machinery on the farm at a fair price is vital. We are only in the near approach of development along this line. The adaptability of the automobile, the farm truck and the farm tractor when it is more perfectly built, the standardizing of machinery

and farm implements, farm wagons of 2,000 types reduced to 20. Farm mowers, cultivators, binders and in fact all have been reduced with a view of forming certain standards.

Land for Returned Soldiers.

We want Maryland boys to return to Maryland soil. We have undeveloped land here. We need them and want them to be Maryand farmers and have the benefit of our churches, our schools and our improved roads. There has never been a better time to go to the soil—improve your health and improve your surroundings.

Business Man.

The responsibility of the business man today is greater than ever in the history of man—large investments, taxes, interest, labor. Yet they must pave the way. The expense of the war debts should be in long-time bonds and not hamper the reconstruction of business. Business needs capital at home and cheaper money.

Improved Roads.

Billions of dollars must be spent by the Federal and State Government in extending our improved concrete roads at right angles from the railroads in all part of agricultural sections of this country. Millions must be spent on our rivers and harbors to give us the benefit of cheaper transportation by water.

Maryland Needs

Connecting the Eastern and Western Shores of Maryland by establishing a ferry from Annapolis to Claiborne, or at any other convenient point to cross the bay, will do more to help solve the distribution of fruits and vegetables for Baltimore direct to the consumer than any step could be taken. It is up to Baltimore to push this and the State of Maryland should be back of it.

Motor Truck Marketing.

Motor truck routes are being established throughout our Eastern country in order to market produce There is a

definite movement being promoted in Washington to accept this produce.

Shorten the distance to market—by building better roads so the farmer can deliver products to cities by auto truck—a saving in time from a loss on perishable foods—a saving in transportation—a saving in packages—a saving in labor. It cannot be accomplished without more improved roads.

Rebuild Railroads.

As the railroads are the centers through which the life commerce flows in like manner a country progresses in proportion to the facilities furnished for the movement of her commerce.

Rebuild the railroads and expand them, and make a more reasonable adjustment of rates. The railroads of the country should be ten years in advance of production. A county develops in direct proportion to the facilities, its volume of railroads for the movement of commerce freely.

Community Exhibit.

The agricultural Society two years ago conceived the idea of holding community exhibits in each county. A large number of these have proven a great success. It has been the means of increased production of vegetables by all classes. The town people have benefitted by growing and exhibiting their products. Thousands of people visit community exhibits from the counties—where we only get a few from each county to come to Baltimore exhibit.

The community exhibits are managed and fostered by our County Agents of the Extension Service, and they have been very helpful in fostering such exhibits.

We cannot estimate the great value the United States Department and the Maryland State College of Agriculture has been to the farmers of Maryland through their many agencies. Let it ever be in the minds of such Institutions to give us scientific and practical men to test out in advance our hard laboring problems.

Banking Facilities.

To encourage further activities in clearing new land, draining and improving our soil, a more careful system must be in universal practice to finance the small farmer—the young man, or woman who is just starting, the soldiers who are returning, that we may get them back to the soil—a loan on growing crops and on warehouse receipts. The Federal Farm Loan has helped, but it is not reaching the smaller farmer. Our local Building and Loan Associations should be encouraged. Small banks in country towns should be shown the importance of looking after the needs of the small farmer.

Utilizing Labor—Not an Idle Man.

This country could profitably utilize every available working man for twenty years to rebuild and increase our improved concrete roads, rebuild our railroads, deepen our water-ways.

Business men should see that every working man and every woman is provided with employment twelve months in the year—not four months and eight months to be idle.

When capital, employer and employee understand each other and lock hands, we can make America bloom like an apple tree in May.

President Harrison: Ladies and gentlemen. it gives me great pleasure to have the honor of introducing to you Col. Clarence Ousley, Assistant Secretary of Agriculture, a man whom I believe most Marylanders know, and certainly most agriculturists know in this country. Through the work of Col. Ousley and his assistants we have been benefitted largely in the past in growing this increased food.

ADDRESS.

By Col. Clarence Ousley.
Assistant Secretary. U. S. Dept. of Agriculture.

Mr. Chairman: Ladies and gentlemen of the Maryland Agricultural Society and the Southern Commercial Congress.

It is a very great pleasure to join with you this afternoon in the deliberations concerning the most important of all occupations. It is a particular gratification that this meeting,

planned in the midst of the greatest war in the world's history, is held at the beginning of the longest peace, we hope, in the world.

We have been delivered from the cruelest carnage that was ever brought upon the world, and we Americans have had the privilege of playing a small part in the final result, so that now since we have cast down autocracy, never to rise again, please God, and since we are seeking to set up an Allied Democracy to hold brute force in abeyance, we can give our major energies to local and personal concerns. I say our major energies, because the result of the war imposes great responsibilities upon us, upon the nation and upon mankind. There is abundance here, but half the world is half naked, hungry and in sorrow. Ten million men, the best of their breed, are dead, and hundreds of thousands have died of starvation, perhaps in the coming months of winter more hundreds of thousands will die of starvation. We cannot leave Europe in this state. That would be unspeakable cruelty and inhumanity, and very dangerous for us. We must have a Government or Governments to treat with before we can be sure of peace, and we must have prosperous peoples to deal with before we can sell our products, so then we have some very grave problems affecting us individually and collectively as well as a part of the brotherhood of man.

The war has taught us some fundamental things that even some of the elders have forgotten and some of the younger ones have never known. Among these fundamental truths is that wealth derives its primary and chief value—wealth of possession, wealth of wage and income, derives its chief or primary value from that which it will purchase in food and raiment. We seem to have forgotten in the swift days of the last generation that the first business of man is to obtain food and clothes, and food and clothing come from the soil. In times of food scarcity Dives and Lazarus are of equal rank in the bread line, and rich and poor are coming into a new appreciation of agriculture, and have a new admiration for Mother Earth.

There is great concern and large undertakings to repeople the land, some of it wise, and some of it, I fear, inspired

No. 1.—Boys' Club Work with Sheep.
—Courtesy of States Relations Service, U. S. D. A.

by the notion that people can be persuaded to go to the land with its hardships and its toil, of which President Harrison has just spoken, and produce abundantly so that food will be cheap. I fear that the self-interest of the consuming masses is behind much of the land settlement propaganda of these days. In so far as that is the purpose, it will fail; because men choose vocations and locations for two reasons. One is their fitness for the vocation, and the other is the hope of reward for the labor performed. My thought is that we will not—I was about to fall into the habit of the day and say "reconstruct," but I do not like the word "reconstruction." It was an unhappy memory for me, and it implies more or less to waste or destruction, and we have had no destruction or waste in agriculture. I prefer to say readjustment or recuperation. In this recuperation or readjustment, I submit to men of business judgment and experience that the principal, controlling factor is the price of the commodity produced and sold, because farmers do not raise products for themselves alone. They raise them to sell, just as manufacturers manufacture goods to sell, and you could not persuade a bunch of business men to extend their manufacture and reduce their profits in order to cheapen the product to the purchaser. We would not get very far with such propaganda.

The farmers' accomplishments during the war—I say, I hope with due restraint and conservatism of language, the farmers' performance during the war was little short of marvelous. As President Harrison has said, one man performed the work of two and sometimes three. I have heard two stories lately that impressed me very deeply—one was narrated to me by a member of Mr. Hoover's staff, who had recently returned from France, and had witnessed some of the tragedy that has been enacted there for four years. The other came to me in a personal notification from a woman in New York State. The first story is a narrative of an actual occurrence to this effect: In one of the villages of Northern France, from which the Germans had been driven, there was the wrecked home of a woman who had lost her husband and two of her sons in the war. She returned to the place after

No. 1.—Boys' Club Work with Sheep.
—Courtesy of States Relations Service, U. S. D. A.

No. 1.—Boys' Club Work with Sheep.
—Courtesy of States Relations Service, U. S. D. A.

by the notion that people can be persuaded to go to the land with its hardships and its toil, of which President Harrison has just spoken, and produce abundantly so that food will be cheap. I fear that the self-interest of the consuming masses is behind much of the land settlement propaganda of these days. In so far as that is the purpose, it will fail; because men choose vocations and locations for two reasons. One is their fitness for the vocation, and the other is the hope of reward for the labor performed. My thought is that we will not—I was about to fall into the habit of the day and say "reconstruct," but I do not like the word "reconstruction." It was an unhappy memory for me, and it implies more or less to waste or destruction, and we have had no destruction or waste in agriculture. I prefer to say readjustment or recuperation. In this recuperation or readjustment, I submit to men of business judgment and experience that the principal, controlling factor is the price of the commodity produced and sold, because farmers do not raise products for themselves alone. They raise them to sell, just as manufacturers manufacture goods to sell, and you could not persuade a bunch of business men to extend their manufacture and reduce their profits in order to cheapen the product to the purchaser. We would not get very far with such propaganda.

The farmers' accomplishments during the war—I say, I hope with due restraint and conservatism of language, the farmers' performance during the war was little short of marvelous. As President Harrison has said, one man performed the work of two and sometimes three. I have heard two stories lately that impressed me very deeply—one was narrated to me by a member of Mr. Hoover's staff, who had recently returned from France, and had witnessed some of the tragedy that has been enacted there for four years. The other came to me in a personal notification from a woman in New York State. The first story is a narrative of an actual occurrence to this effect: In one of the villages of Northern France, from which the Germans had been driven, there was the wrecked home of a woman who had lost her husband and two of her sons in the war. She returned to the place after

No. 1.—Boys' Club Work with Sheep.
—Courtesy of States Relations Service, U. S. D. A.

it was recovered by the French, or perhaps by the British, and her deft fingers soon made somewhat of a habitation of the cellar, with that remarkable thrift which is characteristic of the French people. Her third son about that time was sent home desperately wounded, and he died in her arms. With her own hands she dug the grave and buried his dear body. While she was engaged in that task, the word came that her fourth son had fallen. Without so much as a quiver of her lips, or the moistening of her eyes, she set her lips more firmly, and looked up as though registering a vow to Almighty God and said only "Vive la France" and went on with her work.

The other woman lives in New York State. She is the wife of a farmer. She wrote a letter a few monhs ago asking our experts in farm management for some advice concerning the purchase of another farm, which her husband was considering, and in order that we might thoroughly understand the problems that confronted this hard-working couple, she related the intimate circumstances of their daily life. She said: "On July 2nd I cut an acre and a half of peas, which my husband drew in, and the next day a fine boy was born." "Since that time," she said, "I have been confined, more or less, to the house, but with the help of the little neighbor girl to tend the baby, I have managed to mow twelve acres of hay."

I submit to you the impossible judgment as to which of those two women is the greater heroine. I know not which the more to admire. Ladies and gentlemen, that woman in New York, as that woman in France, is one of millions who are furnishing the food and raiment for these countries. In 1917 at the outbreak of the war, tho the farmers had made their plans for that year, and tho for years they had suffered the loss of man power to recruit the industries of the city, tho there was then a great problem of man power on the farm, and relatively diminishing production, they reconsidered their plans and enlarged their acreage by 23,000,000 under the inspiration of patriotic impulse, and by putting their women and children in the fields like that New York woman whom I have just described they increased our

food yields by a billion bushels. In 1918, with further loss of man power, contributing their due share to the army and the navy, and still the farm being the recruiting place for industrial labor, they increased their acreage three and a half millions more. This fall, in response to appeals of the Department of Agriculture, and the Agricultural Colleges, the State Departments, and agricultural organizations like the Maryland Agricultural Society, they further increased their winter wheat so that today we have the largest acreage in winter wheat ever known in the United States.

So I feel warranted in saying that the performance of the American farmer under the strain of war has been marvelous, and as little as any man, if not less than any man, he has been governed in this production by the price. I met a farmer in Florida a few weeks ago, fell into conversation with him on the train, and I recite this as typical of the state of mind of the American farmer. I heard him say he had planted castor beans, and I made some inquiries, I wanted information concerning the castor bean production. I apologized for injecting myself into the conversation and asked him how his castor beans were coming on. He said "I don't know." I said "Have you a good crop?" I haven't the slightest idea. I never grew them before." "You don't know whether you are going to receive a profit or make a loss?" "I don't know." "How many acres have you planted in castor beans?" "Twenty-eight." "Well, don't you think you were taking a good deal of risk in planting castor beans if you had never planted them before?" "Well, the Government told me that it had to have castor beans to win the war, and it was my business to grow the castor beans." That has been the attitude of the American farmer—the attitude of a great majority of them.

What are the facts for 1919? It is a foolish man who makes a prediction under ordinary circumstances, and particularly in a time like this with world-wide waste and dislocation, but we must try to see somewhat into the future. If we don't we will be floating around in daily confusion. The crops produced in 1918 in the United States and in other producing countries are now available for movement,

whereas heretofore they could not be moved for lack of shipping. The crops available in 1918, it appears from careful observation, will not more than barely suffice for the world's needs until another crop can be produced and harvested. They will perhaps suffice for economical consumption, if we can distribute the products. Australia has two crops of wheat, India has some wheat, Argentina has some wheat, but there perhaps is not more than the world needs until another harvest.

Now, as to our production for 1919—I don't know what the European countries are going to do. No man can tell, but my guess is that the Germans and the Austrians particularly the Hungarians, will come to order in a reasonable time. I don't know what will happen to Russia. I fear that many long months, and perhaps years of tragedy and travail, are the fate of that vast body of ignorant, unorganized people, but I think Germany and the Central Powers will soon come to order; they are well educated and are intelligent. They are so intelligent that I cannot quite get my consent to forgive them for the crimes that they permitted their Governments to commit. I don't draw much distinction between the peoples and their Governments, because I think they have approved and condoned, though of course they did not direct. I heard no protests from Germany when Poland was being starved to make way for German settlers, and I heard no wail from German mothers when the girls of Belgium and Northern France were being taken away by the brutish officers of the Hun Army. I am perfectly willing to let them have food for a price to those who can pay for it, without a price to those who cannot, but we should feed their victims first, and let them wait for the second table.

But they are an industrious and intelligent people, and if they are as hungry as they represent themselves to be, they will get busy in the fields as soon as the spring comes, and produce more than they did last year. Great Britain increased her production in 1918 over the pre-war period, and sent seven million men to the army too. France increased her production over 1917, and sent every man up to fifty

to the army, so Germany with her armies demobilized and the Austrians can increase their production in 1919, so that I think the strain upon this country will be very greatly relieved.

Now, I submit to this group of business men and experienced farmers, that we may not hope for the extraordinary effort of production in 1919 that we had in 1918. The farmers produced those crops at a great sacrifice of comfort and of the health of their women and children in order to save the nation, but the nation is saved. Of course, they realize their obligation also to feed the world, but that is an obligation growing out of the concern for humanity, a very beautiful and becoming sentiment, which I am sure they have in as high degree as any other people, but it does not stimulate them to continued extraordinary efforts. It induces them to furnish of their abundance, but does not induce them to produce at the sacrifice of their health or their comfort, so that I shall not be at all surprised if in some respects the American production in 1919 falls somewhat short of the production of 1917 or 1918. That will be the case, I feel sure, if there is no immediate release of men from industries due to the change from war to peace, but I confess myself very much confused, my mind is unable to forecast industrial development in the next twelve months. I have the feeling, as the President said awhile ago, that we have neglected in these last two years of war, in which we have been engaged, and four years of war in which the world has been engaged, we have neglected or postponed much development; our roads are in bad condition, many houses must be built, many public works must be resumed where they were left off in this country or on the other side. The reconstruction work there is colossal. High Commissioner Tardieu, of France, estimates that it will take a million men two years to rebuild the houses in France. It will take that many more in Belgium, and as many in Serbia, and nobody can calculate what will be required in Russia. So that the demand for labor for public works, etc., it rather seems to me will be fairly well maintained, so that I expect comparatively little excess of labor to seek work on the farm. Indeed, I

rather think the farmers in 1919, will have to solicit labor rather than turn it away, unless my calculations about industrial demands are altogether wrong, and I venture that as a guess only, with very little confidence in it, because these disturbances are so vast that no mind, at least not my mind, can possibly comprehend all the subtle influences that enter into this work of recuperation and readjustment.

But, gentlemen, the problem for us to consider as a people —I mean from the standpoint of agriculture, is the problem of its prosperity. As I said a while ago, in our vast and delirious progress of the preceding generation we rather neglected agriculture. It is almost providential that fifty years ago some statesmen in the American Congress provided for the establishment of the United States Department of Agriculture and the Land Grant Colleges, and those agencies developed in these fifty years, have reached such a point of organization and correlation that when the war program was presented it was communicated at once to the agencies of the Government in the joint employ of the Department of Agriculture and Land Grant Colleges in 2,450 out of 2,900 agricultural Counties in the United States. It was due, I think I may say without exaggeration, I think it was due, this great performance of the American farmer, was largely due to the assistance that these agencies rendered to him, but before that the whole world had neglected agriculture, and much of the world had exploited agriculture.

President Harrison spoke of marketing the products as one of the problems. A few weeks ago I had some figures made by Mr. Esterbrook of the Bureau of Crop Reports. I knew of the great waste between the farm and the consumer on perishable products, vegetables and the like, but I did not know about the cost of distributing staple products like wheat and corn and beef and poultry, both eggs and fowls. I wish I had been thoughtful enough to bring the figures with me. Generally they ran from thirty to more than sixty per cent of cost from the farm to the table. I was down in my State of Texas a few days ago, carrying on some marketing work in cotton, and among many evidences brought to my attention was one case, which was one of literally thou-

sands, in which the farmer by reason of his ignorance of the difference between inch and inch and an eighth staple in cotton had sold his product at $17.50 a bale less than its market value. This ignorance on the part of the farmer as to the grade of his cotton may be accepted as a concrete illustration of the fact that in a large degree for years the American farmer has been exploited by the men who deal in his products.

Gentlemen, we are coming into an age of social justice. We have fought the most cruel war in history to keep one nation from exploiting another nation. If I am not mistaken in the convictions of this new age, we are coming presently to another contest, that no man or set of men by reason of superior intelligence or superior capital or superior organization shall exploit another man or set of men. I submit as a moral as well as an economic question that the producer of the food and raiment of the world is entitled to at least an equal reward with the man who markets and finances his products. I do not impeach the great body of skilled business men in my country. I know them to be patriotic in the highest degree, and I lay no charge against them, but as Mr. Schwab said the other day in discussing the labor question—men of capital had made a mistake in exploiting labor and consumers at the same time by the organization of trusts which they were compelled to abandon under the moral sense as well as the legal acts of the Government, and now they were coming to a new understanding of our relations one to the other. I don't expect a millennium. This is still going to be a world of struggle and of sin of selfishness, and self-interest will always be the mainspring of men's actions, but self-interest must be tempered to the extent that it does not become insatiable greed. If it does, then we may have some form of the political and civil disorders that are now destroying some of the countries in Europe. The best assurance against some of the delusions of Governmental and political affairs that are now advancing which the misguided and the unthinking follow—the best assurance, I think, is a prosperous, contented and happy rural population. I remind you gentlemen that today the rioting in Europe, the Bol-

shevism of Russia, is confined to the congested cities, it is not in the rural places. You cannot make an anarchist of a prosperous, home-owning farmer, and the best assurance of the safety and the prosperity of the American Republic, and of the forces that have been the instrument of our development is a prosperous and contented agricultural people.

One word more since I am speaking of some of these dangerous delusions. It is not within my sphere, and yet as a citizen I cannot help observing some of the dangers which appear on the surface, which I don't think are deep-seated, but which without careful observation may lead us into some serious and unprofitable follies. Notwithstanding the fact that socialism has proved itself impotent against war in Germany, and only another name for anarchy in Russia, we still have in this country some advocates of undertakings, civil and socialistic, who seem to believe, or seem to contemplate that some new order of Society may take the place of police power. The Government has done so well the war task that it had to do that many people are imagining that the Government can do all things well. We have learned how to make the Government more useful in many ways, and we must continue to do that. We have learned that it can be something more than a mere policeman, but we must remember this: What was it, I ask you, that enabled us in eighteen months to construct a war machine and put it in operation three thousand miles across the sea, a war machine in eighteen months superior to the one that Germany had taken fifty years to evolve? It was not a strong government conferring power upon the people, it was a strong, resolute people conferring strength upon the Government. There is no power in Government that inheres in the organization; the power is in the people. And yet, notwithstanding these plain demonstrations there are those among us who, as I said, would lead us into the delusion that because one wrong has been overcome all wrong can be destroyed here by socialistic methods. This is not a perfect Government, but it is the best that the world has yet known, the best that the wisdom of man has been able to devise; it has saved civilization from bondage and shame; it is today the object of the

admiration and the gratitude of all civilized and aspiring peoples; its power is the greatest, its stature the tallest in all the earth. Let us swear our children to defend it as our fathers wrought it, and as we have preserved it, and so in appreciation and humility let us strive to be worthy of this victory that we have won!

SENATOR HARRISON: Ladies and gentlemen, I am sure that everyone present is thoroughly delighted with the splendid address given us, and I hope that each one of us will take it home and double our energies for 1919 in growing more food. That is our duty and I am sure we will do it.

We have with us this afternoon Mr. Charles L. Pack, President of the National War Garden Commission of Washington, D. C.

Mr. Pack pointed out briefly the necessity for raising more food. He asserted that we must have more "Food F. O. B. the kitchen door." He stated that the transportation problem must be aided by victory gardens. He stated the National War Garden Commission will be glad to cooperate with literature and posters upon hearing from the proper committees.

SENATOR HARRISON: We are under many obligations for the address given us. It seems to me that is a good slogan for many of us to grow food F. O. B. the kitchen door. I think that point will go to many a home. I would recommend that many of us should grow more food F. O. B. the kitchen door.

Our next speaker is from Florida, and we will now hear from the Hon. W. A. Bours, on "American Sugar for Americans."

AMERICAN SUGAR FOR AMERICANS.

By W. A. BOURS, Jacksonville, Fla.

By the numerous elements entering into daily modern life, sugar has become one of the most important.

As food, it is the purest and most important carbohydrate. It is a well known fact that the three food elements, carbohydrates, protein and fat have certain functions in common, in that they all yield energy, in the form of heat and muscu-

lar strength; and that for these purposes sugar has the same value as protein and about half the value of fat.

Not only is sugar used as a sweetener of beverages, table foods and manufactured food products, but it is also used in pharmacy, the industries and in the manufacture of candies.

By its use large quantities of fruits are annually preserved, or canned, which would otherwise go to waste.

Molasses, a by-product of the sugar industry, is used as food for both man and live stock. From the low grade molasses enormous quantities of cheap industrial alcohol may be secured, as well as potash, etc.

Commercial sugar, as we know, is derived principally from one of two raw materials—the sugar-cane, or the sugar beet. Each of these two raw materials for sugar require certain climatic and soil conditions for their profitable production—the area within which they may be profitably produced within the United States being comparatively limited, and yet, as to the sugar cane, its extent is such that all of the world's sugar may be produced within the borders of continental United States, at production costs so low that no other country can compete with us.

Sugar cane is essentially a large area crop, requiring an enormous investment in sugar factories, and therefore before the ownership of suitable land has become vested in a multitude of small owners, some action should be taken to make adequate provision for the sugar of this and future generations.

In 1914, at the commencement of the European War, the United States consumed 4,400,000 tons of sugar. Of this large total 76.4% was brought to our shores in ships, and we paid an import duty on 55% of the sugar we consumed—only 23.51% of our sugar supply being produced in continental United States.

One-third of the world's sugar was beet sugar and ⅔ was produced from the sugar cane.

One-fourth of the world's sugar supply came from Germany and Austria-Hungary.

Sugar consumption per capita is increasing in all parts of the world—the annual increased per capita consumption

in Denmark, for example being 35 pounds for the ten year period ending with 1914, as against an increased annual per capita consumption in the United States of 17½ pounds.

Because of the limited area of suitable lands, the sugar industry of the Hawaiian Islands, as well as that of Mauritius and Reunion, has reached its limit. The cane fields of Java are affiliated with a serious cane disease, *sereh,* which prevents the growing of rattoon crops of cane, and has greatly increased sugar production costs.

The exhausted lands and anemic laborers of Puerto Rico, prevents any substantial increase in the Puerto Rican sugar crop; and distance bars the Philippines.

Because of unfavorable climatic conditions in Louisiana and Texas, we cannot hope for an extension of the sugar industry there—as a matter of fact it is decreasing.

New factors have been created by the European war which will greatly increase the price per pound of sugar produced on the sugar islands. The labor situation on the sugar islands has always been a serious one, and it is now critical. The mountainous islands do not permit of the same use of agricultural machinery, as on the level American sugar lands. High ocean freight rates, which will undoubtedly continue for many years is another factor which will increase sugar costs.

It is also obvious that unless the production of sugar is greatly increased, the United States and its Allies must rely upon Germany and Austrian-Hungary for one-fourth of their sugar supply.

It is apparent, therefore, that before it is too late, the area of lands within the borders of the United States best adapted to the economical production of sugar should be looked after, conserved, and protected with as great care as that proposed for our unmined coal, fuel oil, forests, etc. The production of sugar from the time the cane is planted, until it reaches the consumer should be under the watchful eye of our government. It is folly to rely on a foreign government like Cuba, in the hope that it will take the necessary measures against destructive cane diseases, such as now exist in Java.

Comparing the sugar beet and the sugar cane, as raw material for sugar, we find that the sugar beet requires a very large amount of hand labor, the United States Department of Agriculture estimating that it required 500,000 acres of land and 81,000 farmers to produce the average American sugar crop prior to 1915. Irrigation and fuel costs are also determining in beet sugar production.

The average American beet sugar crop can be produced from the sugar cane on only 180,000 acres of land, with but 5,000 farmers, yet our government has expended many millions of dollars in irrigation projects and beet sugar promotion, while in that section of the United States where the sugar cane grows as well or better than in the most favored parts of the world, nothing has been done by our Government, but the State of Florida, at its own expense, is reclaiming the most wonderful body of sugar lands in the entire world.

Before the European War, 50 Cuban sugar factories produced one-half of the Cuban sugar crop at a cost of $1.45 per 100 pounds. By bleaching that sugar by means of the sulphitation process, just as is now being done with all of the American beet sugar, and washing the sugar while it it is still in the centrifugals, and then drying it in rotary dryers, the highest grade of white granulated sugar may be produced direct from the cane juice at less than 2 cents per pound.

The 44 gallons of molasses produced with each ton of Cuban sugar brings but 77 cents, while within the United States, the same molasses is worth at least $10, which, of course, reduces the cost of sugar per ton just that much.

It is folloy to assert that Florida, extending finger like into the warmth of the same tropical gulf stream in which Cuba is located, cannot from heavier yields of sweeter, purer, cane, produce commercial sugar with *at least* the same efficiency and economy as Cuba. On the other hand, considering the texture and level character of Florida's rich sugar lands, unbroken by mountains and watercourses, permitting the use of all modern machinery for growing, harvesting and transporting the cane to the sugar factories, there is a firm founda-

tion for the statement that in no other part of the entire world can sugar be produced as cheaply as in Florida.

It is fortunate, indeed, that on the southeast corner of the greatest sugar market in the world—the United States, there exists suitable conditions for a cheap sugar supply.

In South Florida, the sugar cane "arrows," i. e. produces flowers, just as in all the sugar islands, and the cane may safely stand in the field from January to June, and be mechanically harvested from day to day, as required by the sugar factories.

Many millions have been expended on irrigation projects in Hawaii, for sugar production—24 plantations expending 13 million dollars, and one plantation (Oahu) expending 2½ million dollars for irrigation of but 8,600 acres of land—an expenditure unnecessary in Florida, because of the natural rainfall during the growing season which may be cheaply supplemented, if desired, by an inexhaustible supply of fresh waters, with a lift of not over 20 feet.

While Florida's rich lands can now produce greater yields of cane than are secured in other countries, except Hawaii, without the use of fertilizers, yet a *permanent* sugar industry is largely dependent upon an adequate supply of fertilizers.

The largest body of phosphate in the world lies on the western edge of South Florida's sugar lands. Inexhaustible supplies of coral rock afford an ample supply of lime, and Florida's legumes produce with profit an adequate supply of nitrogen, which must be purchased by other sugar countries.

The fresh juice of the cane can be converted in Florida sugar factories directly into the finished white granulated sugar of commerce; packed in sealed containers, made from nearby forests, and loaded into the modern marketing unit—the railroad freight car, and cheaply distributed to all parts of the world's greatest sugar market—the United States—a sanitary food product, direct from cane juice to housewife, in sealed containers, untouched by human hands.

Florida's great seaports can likewise distribute its surplus sugar to all parts of the world.

Sugar is made by evaporating the cane juice until the sugar crystalizes, and then separating the sugar crystals from

the molasses. The evaporation may take place in an open iron kettle, and the molasses may be separated by draining, or by centrifugal, similar to the cream separators used by farmers.

If the fumes of burning sulphur are forced through the hot cane juice, the result will be white sugar. The sugar refiner takes out the coloring matter by remelting the sugar crystals to a syrup, and then passing the syrup through bone black. The refiner is not a sugar producer, and his process is essential to his trade control of our sugar supply—the refiner is in fact nothing more nor less than a sugar merchant.

When you have isolated the sugar crystal, you cannot change it chemically or physically by remelting it, but the remelting does take away some of the sweetness. Strictly speaking, therefore, the trade name "raw sugar" is a misnomer, and the sugar refiner is an unnecessary barnacle on a modern sugar industry.

Were it not for the fact that a large amount of hand labor is required to produce sugar by primitive methods, there would be no difficulty in quickly extending the American sugar production. To be cheaply made, however, not only must machinery be used in the cane fields, but a very large amount of capital is required for the sugar factories, and therein lies the difficulty of extending American sugar production.

To produce the 4,400,000 tons of sugar annually consumed in America, an investment in land, factories and equipment of about 250 million dollars would be required.

In a booklet entitled "The Sugar Situation," recently written by C. Lyman Spencer, of my city, it is clearly shown that exclusive of import duty, the United States each year pays in unnecessary charges for labor, handling and transportation of sugar more than 200 million dollars.

The average cost of sugar to the American consumer for the ten year period ending in 1914 was $5.91 per 100 pounds. Before the European War one-half of the Cuban 96 test sugar was produced at a cost of $1.45 per 100 pounds. There is ample evidence to show that the finished white granulated sugar can be produced at a profit in Florida for 2 cents per pound.

For the ten year period named, the cost of getting that sugar from the refiner to the American consumer was $1.05 per 100 pounds. Therefore, by establishing an American sugar industry under suitable climatic conditions, it should be possible to sell sugar to the consumer for 3 cents a pound, thus annually saving American consumers over 250 million dollars.

In Florida we have several million acres of rich sugar lands which are not in the everglades; but the everglades comprise a solid body of muck lands about 100 miles in length and 60 miles in width, with the muck varying from 20 feet deep at the upper end to 4 feet at the southern end.

Imagine, if you will, an enormous board 60 by 100 miles in size; raise the northern end of that board 21 feet above sea level, and the southern end 4 feet, and you obtain a correct idea of the surface conditions of the Florida everglades.

The waters of the large fresh water lake—Okechobee, formerly overflowed and seeped through this mass of muck on its way towards the sea, thus keeping it wet and soggy.

Today the water level of lake Okechobee has been lowered, and many miles of drainage canal have been constructed, and many more miles have been laid out.

On that land, without the use of fertilizers 35 tons of cane per acre is an average yield, as against less than 20 tons per acre in Cuba. Once planted that cane will reproduce rattoon crops of cane for ten to 25 years, without replanting—Mr. Burgierres, a Louisianna sugar planter stating that his rattoon crops of cane cost him less than $1.00 per acre annually for cultivation.

A single cane field in Florida 45.52 miles square will produce the 4,400,000 tons of sugar consumed in America, and the longest haul of cane to any one of the 70 factories required to convert it into sugar will be 3.3 miles.

A sinking fund of one cent a pound on sugar (less than the present duty) will, in five years time pay the entire cost of lands, sugar cane fields and factories necessary for the American sugar supply.

The time has come when it is proper to inquire whether the United States and its allies shall rely upon Germany and

Austria-Hungary for 25% of their sugar supply, or whether we shall produce our own sugar on American soil, with American labor and American capital.

President Harrison—we are glad to hear this clear statement regarding the production of sugar. The session will stand adjourned.

THURSDAY, DECEMBER 12th, 10.00 A. M.

President Harrison called the meeting to order and called on Dr. T. B. Symons for report of the Secretary-Treasurer.

REPORT OF SECRETARY-TREASURER OF THE MARYLAND AGRICULTURAL SOCIETY.

By T. B. Symons.

Mr. President and Gentlemen:

This is the third annual convention of the Maryland Agricultural Society. The wisdom of federating all of the Agricultural Associations in the State into this organization and at the same time maintaining the individual anatomy of each industry has proved to be for the best interests of all concerned. I believe we now have the best form of organization of our agricultural interests of any State in the Union. It is elastic and at the same time united. This has been demonstrated during the past two years. This Society discussed and planned the agricultural war program for 1918 last December and the farmers of the State responded generously and patriotically to the call of all agencies in the State as well as in the nation.

Our farmers have been presented with even more difficult labor conditions by virtue of our proximity to the great war industries than probably any other region in the country, yet a larger acreage of food crops has been planted and harvested. Farm owners have worked the past year, who heretofore had not worked in the field for years. Our farm women, to whom we should pay an everlasting tribute, have greatly aided in the accomplishment of the common victory. We rejoice together for the victory achieved and I hope this meeting will

No. 1.—Apple Section in the State Exhibit held in conjunction with Southern States Exhibition, Baltimore, December 8-12, 1918.

Austria-Hungary for 25% of their sugar supply, or whether we shall produce our own sugar on American soil, with American labor and American capital.

President Harrison—we are glad to hear this clear statement regarding the production of sugar. The session will stand adjourned.

THURSDAY, DECEMBER 12th, 10.00 A. M.

President Harrison called the meeting to order and called on Dr. T. B. Symons for report of the Secretary-Treasurer.

REPORT OF SECRETARY-TREASURER OF THE MARYLAND AGRICULTURAL SOCIETY.

By T. B. Symons.

Mr. President and Gentlemen:

This is the third annual convention of the Maryland Agricultural Society. The wisdom of federating all of the Agricultural Associations in the State into this organization and at the same time maintaining the individual anatomy of each industry has proved to be for the best interests of all concerned. I believe we now have the best form of organization of our agricultural interests of any State in the Union. It is elastic and at the same time united. This has been demonstrated during the past two years. This Society discussed and planned the agricultural war program for 1918 last December and the farmers of the State responded generously and patriotically to the call of all agencies in the State as well as in the nation.

Our farmers have been presented with even more difficult labor conditions by virtue of our proximity to the great war industries than probably any other region in the country, yet a larger acreage of food crops has been planted and harvested. Farm owners have worked the past year, who heretofore had not worked in the field for years. Our farm women, to whom we should pay an everlasting tribute, have greatly aided in the accomplishment of the common victory. We rejoice together for the victory achieved and I hope this meeting will

No. 1.—Apple Section in the State Exhibit held in conjunction with Southern States Exhibition, Baltimore, December 8-12, 1918.

serve as a source of inspiration and assistance to all of us in solving some of our problems in agriculture in the days to come. May we pay tribute to the gallant sons of Maryland farmers who have so distinguished themselves as defenders of liberty and civilization.

It is now our privilege and duty, my friends, to plan for 1919 season. The demand for food will be even more acute during the next twelve months than in the past. With our domestic and industrial conditions somewhat easier, we should be able to meet the increases in food crops and live stock that are demanded of us to feed the half-starved people of Europe. A comprehensive program has been prepared by our Extension Service for consideration and adoption by this conference embodying our agricultural program for 1919.

Summary of Work.

A committee of the agricultural council held several meetings last spring and summer with a view of securing united effort to relieve the labor problem as much as possible. The Governor and State Council of Defense cooperated with the committee in every possible manner.

The Agriculural Council decided to pursue the same policy this year regarding the encouragement of local community exhibits by appropriating $100.00 to each county to be offered as awards for agricultural exhibits. A large number of exhibits have been held throughout the State. This educational policy has resulted in reaching a much larger number of farmers than was ever possible through our Maryland Week Show. Community exhibits stimulate local interest and pride in the agriculture of the county.

Now that the war is over, the future policy of the Society regarding our annual show will have to be determined. Our finances will not permit contributing to the community exhibits and also offering awards at the Maryland Week Show

At the earnest solicitation of the Southern Commercial Congress, we finally arranged to make a small State exhibit at the Allied War Exposition and Southern States Exhibit. This exhibit, which will occupy about 1,500 square feet in the Armory, is intended to represent the State's agricultural

resources. It will be difficult to finance this exhibit but it was felt that the State should embrace this opportunity to show to the Southern and other visitors to the city during this convention, Maryland's great agricultural possibilities. A committee of the Extension Service, headed by Prof. Cory, has arranged the exhibition. Many growers, under considerable difficulty, have aided in making the exhibit a representative one.

I am pleased to announce that two State Associations have been organized during the past year and formally request to become affiliated with the agricultural Society. The first is the Vegetable Growers', which were organized last December, and the second is the Sheep Raisers, which were organized into a State Association last April. These two organizations represent large and important industries in the State. I am sure the Society will welcome their affiliation. As representatives of other industries show strength and desire to cooperate, we hope to organize them into State Associations. This is especially true of the swine breeders, beef cattle feeders, horse breeders, etc.

As much attention is now being directed to labor-saving machinery, an effort has been made to have all tractor owners assemble for a conference. Conferences have been held in the counties and a series of tractor schools will be conducted throughout the State by the Extension Service this winter.

The Society offered prizes for the best essay written by a tractor owner on the use of his machine this summer. Many competed and some very interesting data secured. We have also arranged to have a conference of implement dealers in the State at Baltimore this week. It is believed that getting the farmer and farm implement dealers together will result in a better understanding of the difficulties with which both have to contend. It is hoped that the implement dealers will continue to meet with us for mutual benefits.

In conclusion, the work of the Society during the past strenuous year has progressed satisfactorily. We are building upon a sound foundation and I am sure that every farmer connected with each of the affiliated associations appreciates the scope and unity of our organization.

As treasurer, I submit a balance of $25.16 in the treaury, September 30th, 1918. The accounts have been audited by a committee of the Horticultural Society to which the fund was legally appropriated during the past fiscal year. The State appropriation is now made available to the Agricultural Society during the coming year.

Dr. Symons then presented the following statement which was recommended by the Executive Council of the Society for adoption as the Maryland Agricultural and Readjustment program for 1919:

MARYLAND'S AGRICULTURAL AND READJUSTMENT PROGRAM FOR 1919

The representatives of the agricultural industry of Maryland rejoice in the common victory achieved by our Nation in association with our Allies in the defense of Freedom, equality, justice and humanity for all the people of the world. We confidently hope for a lasting peace based upon justice to all people in every land.

The farmers of this State feel justly proud of the part they have taken, in loyalty and devotion to the Government, in food production, in financial aid and in the gift of their sons to their Country's cause.

They have cheerfully made every sacrifice in supporting the Government in the prosecution of the great war. Now that peace is near at hand, the farmers of this State feel called upon to play a part commensurate with the importance of the industry they represent during the readjustment period in formulating policies which are to guide the State and Nation. We recognize that the present situation calls for an economic adjustment in all industries in order to prevent hysterical fluctuations in prices of commodities, food and labor.

We believe that in the adjustment of prices the great agricultural industry demands the same degree of protection as is required by the great body of citizens who constitute the consuming public. That legislation must be enacted along sane lines as developed by conference of men of broad views and constructive statesmanship. In particular, we believe that the traditional conservatism of the American farmer should be on guard to prevent the development and spread of radical foreign theories and tendencies of certain elements of our population already in evidence in certain sections of our country.

In approaching this period the members of the Maryland Agricultural Society desire to propose the following suggestions for a constructive program for 1919:

The Crop Program

1. That in view of the continued urgency for a maximum production of foodstuffs, as expressed by the Government through its survey of the world's need for food we, the Maryland Agricultural Society representing the farmers of Maryland, pledge an increase in production commensurate with available labor and improved facilities. The specific program for 1919 involves the proper care of the present seeded grain crops to insure the five to ten per cent. increase of wheat and rye. In the spring of 1919 increases in the corn crop from 2 to 5 per cent.; hay 2 to 5 per cent.; Irish potatoes 5 to 10 per cent.; sweet potatoes 5 to 10 per cent., together with a home garden for every family. In live stock we pledge the maintenance of the production of beef cattle; an increase in hog production of 5 per cent.; a five per cent. increase in egg production, maintenance of the dairy production and a substantial increase in sheep throughout the State.

Permanent Agriculture

2. In the readjustment period we emphasize a careful analysis of fundamental principles for successful and permanent agriculture involving a safe and proper relation of suitably adapted crops, maintenance of soil fertility, demands of local markets and providing fully for the domestic and live stock needs of the farm.

3. We direct special attention to the importance and the more general use of efficient labor saving machinery in the home and on the farm as a contributing factor in supplementing the shortage of labor and increasing the efficiency of the farm.

Rehabilitation of Soldiers

4. We believe it to be a natural duty and privilege for the Government of State and Nation to provide an opportunity for all returning soldiers desiring to engage in agriculture upon an easy financial and practical basis. We believe that they should be given an opportunity to return to their home states and acquire homes in settled communities. We feel that there is ample land now unused needing man power and that our efforts should be directed towards intensive agriculture rather than the reclamation of vast areas of arid, swamp or cut over lands in the country far from markets and rural development.

Good Roads

5. We favor the development and the construction of public improvements, especially good roads by the State to take advantage of Federal funds appropriated for this purpose. It is felt that an aggressive road construction policy by State and Nation for market and post roads will not only promote the welfare of agriculture, but will serve to employ an over-supply of labor caused by the return of soldiers from the front.

To Co-operate With Entire South

6. We welcome this opportunity to co-operate with the Southern Commercial Congress and Baltimore City in the present Convention to emphasize to the South and the Nation, Baltimore's great industrial and commercial possibilities as the gateway to business, not only for the great states south of the Mason and Dixon Line, but also to the upbuilding of trade with the South American republics.

Better Community Organization

7. For the continual development of the agricultural industry of this State we recognize that co-operation and community spirit must be our watchwords. We urge upon all rural communities, organization of the community into an active association for consideration and effective action upon all community needs. We urge upon all farmers their active support and encouragement of all educational agencies especially the county and home demonstration agents whose universal service demands our united co-operation.

Fair Adjustment of Prices

8. In view of the constant misunderstanding between producer and consumer relative to prices of farm products arising from lack of authoritative information concerning production costs, we recommend that the United States Department of Agriculture provide as early as practical for thorough investigations into the cost of producing and marketing our various agricultural products.

To Insure Adequate Labor

9. In facing the readjustment period and the redistribution of labor we feel that certain reforms in the management and employment of farm labor are inevitable. We must make farm labor satisfied in order to compete with other industries. We must provide better living conditions. We must give fair compensation, better housing facilities and require a fair day's work which we believe should average ten hours. They should be encouraged to own their homes. Under such conditions it is believed that labor will more willingly serve in the agricultural industry, and thus relieve to some extent, the present prejudice of labor against the farm work.

Better Marketing

10. We believe tht farmers should consider carefully the need of co-operation in the business of selling or disposing of their products. No industrial business exists without a proper selling or marketing organization. Individuals cannot compete with co-operative bodies of producers. We favor the passage of such legislation as will permit farmers co-operating properly in the distribution of their products.

We also urge a universal system by which farmers may secure short-term loans comparable with their business, and request such amendments as will make the Farm Loan Act fairly applicable to the fruit growers and small farmers.

Tribute to Farm Women

11. We express our great admiration for the patriotic, unselfish and distinguished service rendered by women of this country in this great war. Particularly do we pay tribute to the farm women who have so ably assisted in production as well as in the conservation of food. We urge upon all farmers and farm women continued emphasis upon the proper conservation of all farm products.

Caution Against Universal Military Training

12. In view of the proposals in some quarters for a large standing army and an unconquerable navy, we caution the State and Nation against a policy of militarism which would develop a spirit of combat, require needless financial support and rob this Nation of the fruits of the present victory that is dedicated to peace and mankind.

13. We endorse the Torrens system of land registration and urge its adoption by the State by suitable legislation.

Develop the Waterways

14. We earnestly urge the Federal Government to inaugurate a constructive policy in the proper development of our inland waterways and harbors. This will serve as a wonderful and necessary aid to our transportation system.

Rural Schools

15. We direct attention to the importance of developing our rural schools. We urge that agricultural education be emphasized in every rural and secondary school of our State.

16. We congratulate the effective work of the Boys' Working Reserve as conducted in the State during the past season, and confidently hope that the organization will continue its good work during the coming season.

MR. E. P. COHILL: I notice nothing was said about the schools. I was connected with the schools a great many years. I would like to have something said about the rural schools. They are entitled to have as good facilities for the education as are those living in the larger communities, and everyone who will ride around through the State will readily see the shortcomings of the rural school.

Then there is nothing said about the Boys' Reserve. I want to put in a good word for the boys. Those boys properly handled certainly did good work. They did good work for us, after we found just what they wanted and what we wanted. Another year we could start in from the beginning, and we would get entirely satisfactory work from them. Those boys did good work. Like all other organizations, taken as a whole the boys did splendid work for us, and I would like to have them commended.

PRESIDENT HARRISON: Then you recommend these two points

MR. COHILL: Yes, the rural public school and the Boys' Working Reserve.

PRESIDENT HARRISON: Mr. Symons covered the fourteen practical points, but Mr. Cohill has added two more, going him two better. I will be glad to hear from anyone else. We have got to take care of the schools, and we certainly must take care of the boys.

It was moved and seconded that the report be adopted as a whole, with the addition of the two suggestions of Mr. Cohill.

DR. SYMONS: Do you not want to mention ten hours as a working day for the farmer?

MR. MORRISON: I think it well to mention the ten hour day.

MR. MORRISON: I think we should make some statement in reference to the provision for over time—ten hours is too short in certain times of the year.

MR. VINCENT: It is hard on the farmer to start in at nine or ten o'clock in harvest time, when the man can start in to haul in his hay, he may have to wait an hour or two. At that time he wants every hour to work and it is up to him and his hands to work two or three more hours to get that hay in.

MR. W. F. ALLEN: We call ten hours a day. A day's hours may be nine, ten or eleven, but we pay the men for the time they make, and that is more satisfactory to us.

MR. E. P. COHILL: We employ from thirty to three hundred men on the farm, and we pay them by the hour.

PRESIDENT HARRISON: That has been our system for several years and we find it quite satisfactory. All in favor of the motion for the adoption of this statement says aye, opposed no. Unanimously carried.

We have the great pleasure this morning to have with us Dr. A. F. Woods, President of the Maryland State College of Agriculture who I take pleasure in introducing.

SOME JOBS THAT ARE "UP TO US."

By DR. A. F. WOODS, President, Maryland State College.

I cannot present anything new for consideration, and I don't want to take very much time discussing any of the points that you have already settled; I only want to emphasize certain of the points which I think perhaps are

worthy of emphasis, and which I can do in a very few minutes. But before taking up in detail some of these points I want to call your attention to the crop report issued yesterday by the U. S. Department of Agriculture, exceeding twelve billion dollars, one of the very largest farm values reported, the largest that has ever been reached by American farm crops—exceeding the 1917 values by more than half a billion dollars on corn, and three hundred million over last year on wheat.

Our farmers produced these large values and large increases in production under conditions existing this past year that have never been equalled in severity in this country, particularly in the matter of labor. It only shows what can be done under pressure by the American farmer. The interest which the farm machinery part of this convention has aroused is another evidence of the fact that the farmers are alive to the problem of saving labor, and alive to the fact that the readjustment period will be a period in which farm machinery will take a much larger and more effective part in the work of the farm, as it did following the Civil War.

Every Member an Extension Worker.

Then I think we need to bear always in mind—it has been emphasized over and over again in every session of this convention, that we will do well to spread the good tidings we have learned here, because like all meetings of this kind, the attendance is by those who are already fairly well acquainted with the trend of the times, fairly well able to think for themselves and looking for the new things. If you lock it up in your own minds and heads it will not accomplish what these sessions are expected to accomplish, because the sinners are not here.

The people that need conversion and need help and need readjusting are not here, and the chances are, very few of them will read our very valuable agricultural paper, The Maryland Farmer. It is the most valuable publication in the East and perhaps elsewhere in the country, at least for us. The inefficient farmers don't come to these meetings and they don't read, and they don't go to farmers' meetings

and farmers' institutes, and don't get anywhere else. If we want this to take hold and bear the results it should, everyone of you will have to become an extension agent to carry the message to the men who need it.

I think every student of agricultural development realizes, if he has been in the work very long, that it is not always easy to approach these men who do not come to these meetings. It is frequently and usually the case that their farming has not been very successful or profitable, and they don't think they can afford the time or money, it is not a paying game, and consequently they think that it does not pay for them to waste their time coming here. Now the larger problem of reconstruction is, I believe, to make farming profitable for these men. As far as possible, we must plan to improve the conditions in which they are working so that they will get the most possible out of their labor. One of the very first factors is to make it possible for them to get the temporary help that they need.

That leads me to the first point which has been emphasized in most of these meetings, especially today, and that is the question of the labor that will come back from the army, the returned soldier. Everyone of the men that have been trained in agriculture, that have been taken from the farms, or that are apt to go back to the farms, should be taken back to the farms in some way or other. We ought to see to it that we have an efficient working committee in this State to get in touch with these men before they leave the army and direct them back as far as possible to their homes.

Land Policies.

We have more than one million acres of land that needs to be beveloped in Maryland, better land than anything in much of the undeveloped Western territory, or in much of the Southern territory that is to be brought under cultivation. I don't want to say anything against the development of that land when the time comes. But we don't want three or four hundred million acres of land now in stumps or in swamps in large tracts brought into competition at the present time with the developed agricultural lands here. Instead of helping American agriculture that is going to hinder

its development just as the big development of the Northwest Territory after the Civil War hindered the development of agriculture in the East and South. The development of that cheap land and the products produced on it and the call of labor to that land was a set-back which Eastern agriculture has hardly recovered from yet—we are just beginning to get over it. Now we don't want the period of readjustment following this war to have connected with it any such error as that. When our population increases to seventy-five or one hundred per square mile, then will be time enough to bring that land into agricultural use. Until we reach that point there is not going to be any economic demand for that sort of development. The great agricultural areas of Europe have a population of 150 to 300 per square mile compared with our fifty.

There is much land that needs draining here that should be drained right away. Maryland needs a comprehensive drainage plan. That is a State policy that ought to be put into operation as soon as possible. It goes with good roads, one of the things that is absolutely essential to good roads in many parts of the State. The failure of a good deal of our road system this last winter was due to improper drainage under those roads rather than to anything else. Poor drainage of contiguous lands often makes road drainage impossible.

Drainage will bring into use considerable areas of land in some of our counties that could be utilized by our returned soldiers and that with the land that is already in farms in our State, already cleared and under the plow and needing only labor, capital and fertilizer to produce the crops, we can take care of every man that we can get back on the farms from the American army, and every man that we can induce to take up agriculture as a vocation.

Serious to Divert Labor.

We shall have no difficulty from the agricultural standpoint in taking care of all skilled agricultural labor. The most serious difficulty that I see is that labor will be diverted either to some of these large reclamation projects, or will be diverted to trades and industries not directly connected

with agriculture, but dependent upon it. The greatest danger is that our efficient labor will be drawn away from the present developed agricultural territory and that the farmers will in the next two or three years have a more difficult problem on their hands, from the labor standpoint than in the past. They may not be able to entirely overcome this through the more efficient use of farm machinery. I want to say that every effort that this Association can put forth should be put forth to conserve the farm labor, to direct as much of it back to the farm as possible by better housing, higher wages, and in every way making farm labor conditions more attractive.

I think one other method should be very strongly advocated. Many of these men would like to work on the farms, would be glad to go back to them if they could have a few acres of land, with a comfortable home, a garden and a cow, and an opportunity to put part of their time on that home tract, and sell the rest of their labor to the community. This is a permanent type of farm labor developed in a good many sections very successfully. We ought to do more of this sort of thing in Maryland. It has great possibilities.

Higher Prices Needed to Increase Wages.

Some investigating agency of the Government has said that the average wage of the industrial workman must not be less than 72 cents an hour. If that is the fact, we must get the price of our farm products and the cost of producing them up to the point where our wages can compete with those industrial wages. If we don't do it there won't be any industries to pay the wages. It should be the policy of the industrial life of the country to see to it that the foundation on which that industrial life rests is maintained at a level of competition that can be met by all. It is to the interest of all that we should maintain the highest producing power of our acreage and our man power, in order to maintain all the rest of the structure. There is a growing appreciation of this apparent at the present time on the part of the people engaged in other industries. I hope it will develop into a policy of the nation which will see to it that this relation be-

tween the wages of industry and the conditions of the farm will be such that they can be maintained on a parity.

Amend the Farm Loan Act.

There are one or two legislative matters that we shall have to consider if we are going to accomplish anything. One of them is an amendment of the Farm Loan Act. It is the opinion of those who have most carefully studied the financial problems that a larger amount of money will have to be loaned on farm security than is now being loaned on the average. Of course, the interest rates will probably have to remain about as they are, but the percentage of the loan will have to be changed and probably some short time loan system will have to be provided. The President has recommended the latter, and the farmer should study both and see that whatever amendments are made are made with reference to the needs as understood by the agricultural public.

Rural School Development Essential.

The other point that I think deserves special emphasis is what Mr. Cohill called attention to—the better rural school. That is an absolute essential to any development or progress in rural life. The Western States, many of them, have awakened to that need, and the State is taking hold of the problem of improving the rural school in a most effective way.

Out there the movement has been one of consolidation of smaller units. I believe that is the solution here. We must in the most effective way possible combine the smaller units so that we can have effective rural schools. We need the very best schools in the country, with problems of agriculture taught rather than the other professions or industries. We must see to it, the city people must see to it, the industrial people must see to it, that this reserve of life, of industry and trade, and commerce, which is, the rural district is provided with a sound and progressive type of education.

Schools a State and National Problem.

This cannot be done at the expense of the rural district alone. That has been demonstrated in every State where it

has been tried—it is a State and a national problem. The county, the State and the nation must help to pay that bill. Education is a national and a State problem. National and State aid is necessary, and must be provided.

The Hughes Bill which is now in operation provides for training in high school grades, in these rural problems, but the present legislation does not provide help for anything below the high school grades. The greatest need is for those lower schools. A bill should be passed by Congress which provides help that is needed to carry this education down to the schools of the people, where 92 per cent. of the people get all the education that they ever get. We should see to it that we can get that legislation and make it effective. It is really fundamental to all the other things that we have talked about and planned about, and I hope that we will at least do our part to see that that legislation is carried through.

I must not take any more time except to thank you for the help you have given the various agencies of the State Department of Agriculture in its work over the State. We realize that we have not in many respects come up to your expectation, but we hope to be able to improve with your good criticism. I know that the representatives of the State Board of Agriculture, the State College, have profited by these meetings. We hope you will not forget to give us that friendly help that we need.

PRESIDENT HARRISON: We will now hear from Dr. H. J. Patterson, Director of the Maryland Experiment Station on "Rehabilitation of the Returned Soldier."

THE REHABILITATION OF THE RETURNED SOLDIER.

By DR. H. J. PATTERSON,

Director Maryland Experiment Station.

We all welcome the returned soldiers. Our soldiers have served us and our country well in the greatest war in history. The service has been equally great and important whether it has been rendered in this country or on the battle-field of Europe. In the soldiers' absence, we pledged them our sup-

port through our government, the Red Cross and the war-work associations. We also pledged that in times of emergency and anxiety, their families need want for nothing which friendly interest and ample resources could supply. When the soldiers return this interest in them and their families must not cease.

Our greater opportunity to be of service to our returned soldiers may be in aiding them to reestablish themselves in every-day civil life, whether that be in their old position or in some new business or profession.

The time which men have spent in the army has made a decided break in their regular life's work. To most men this interruption has been at much personal sacrifice. Yet the army experience has in many instances given men a new vision of the opportunities presented in both old and new fields of labor.

The first element of success and happiness is for men to like and find pleasure in their work. This being the case, a special effort should be made to help the returned soldier to locate in a line of work which he desires to pursue and which will give him pleasure as well as a satisfactory remuneration.

If men are not fully prepared or trained for the kind of work they would like to follow, the State and National Government should cooperate in giving them the necessary training in so far as would be possible and practical. This opportunity for training should be given before these men take a regular position so as to prevent another serious break in their life's work.

There, of course, is a limit to which the training for new occupation could be undertaken. The training undertaken would necessarily be circumscribed by previous experience of the man, his capacity and the amount of time which would be required to give the training he would need to successfully follow his chosen work.

The schools and colleges which are now supported by the State and Federal Government could give much of the training required. The scope of work undertaken should cover a wide range and should not be limited to any one class.

There has been relatively little said about giving the returned soldier assistance in establishing himself in profession and industry other than agriculture. While agriculture is our basic industry and the products of the soil are particularly needed at this time, yet in making provisions for those who desire to farm, we must not neglect or discriminate against those who prefer other pursuits. We must avoid class distinctions or feelings.

In any rehabilitation program we must give careful consideration to stabilizing labor and the various industries. With the facts which are available at present, there would seem to be no necessity for anxiety as to finding enough work for men to do. The system of national and state highways which has been provided for would occupy much labor for a number of years.

There is no doubt that the farms of the United States are undermanned. It has been estimated that the farms of the United States would absorb for labor about one million men.

There are a number of propositions presented for providing land for returned soldiers who desire to farm. Most of the plans have merit and probably could be availed of at least in part.

In considering all the plans, we should keep in mind the following questions:

1. How much more agricultural products does our country and the world need?
2. How much new land will it be necessary to devote to crops to supply the demand?
3. How many soldiers or people not now engaged in agriculture desire farms?

Upon these questions depend the plan and scope of any projects to be undertaken by the government to provide land. Also upon these questions will depend the inducements which could be presented to men to engage in agricultural pursuits.

The propositions and plans proposed for procuring land for soldiers may be classified under four kinds and sources:

1. Drained swamp lands of the East and South.
2. Irrigated arid lands of the West and Southwest.
3. Cleared stump lands of the South and Northwest.

4. Fully utilizing and cropping of the cleared and improved lands in the farms which are idle for want of labor and capital.

Any plan adopted for the rehabilitation of returned soldiers on the land must be national in scope, and provide for cooperation between the States and the Federal Government.

The plan which would seem most desirable for Maryland should provide for the location of the soldiers on land in their home states, and utilizing for this purpose the improved land which is not farmed for want of labor and capital, the abandoned farms or parts of farms, and the waste lands which need clearing or drainage.

It would certainly seem more desirable and safer to fully utilize lands which are already cleared and improved before bringing more undeveloped land into competition with it.

If farms cannot be fully cropped for want of labor, would it seem to be a good policy to clear or develop more farms?

In making plans for locating returned soldiers on the land, the aim should be to develop and stabilize agriculture. This end would be gained to the fullest extent by providing land for soldiers in their home states. Such a plan would have the following advantages:

1. Give a wider and more equitable distribution of the soldiers.

2. Enable the men to farm under conditions with which they are familiar, and thus increase their efficiency.

3. Permit the men to settle and live near their homes and friends.

4. Prevent the bringing of large bodies of new land into competition with the older agricultural sections.

5. Develop the unused farms and portions of farms near the largest centers of population.

6. Prevent the taxing of the developed sections of the country to provide for clearing, irrigation, transportation facilities, schools, churches, etc., for the lands which are distant fro mmarkets and which would come in competition with the older sections.

7. Enable the soldiers to settle in the sections which are

already provided with good roads, schools and churches, and other things which contribute to making life more congenial.

8. Place most of the men near the big centers of population, thus giving them good markets for their products. This would be of mutual advantage to the producer and consmer.

This plan of locating the soldiers on farms or parts of farms which are already improved should not prevent the reclaiming of some areas by irrigation, drainage and clearing, and the infiltration process of distribution should not prevent the establishment of colonies or cooperative communities.

To handle all the matters which would likely come up in connection with a project of this nature would require a close cooperation of the States and the Federal Government. The States should establish in connection with some of their existing agencies—probably the State Board of Agriculture—a reclamation service, to cooperate with the U. S. Reclamation Service.

The plan for the reclamation service, as outlined by Dr. T. B. Symons in the "Maryland Farmer" should meet this requirement. (See Vol. No. 5, October 18, 1918.)

The land should be placed at the disposal of the soldiers at as low a price and upon as good terms as possible. The states should protect soldiers from being imposed upon by owners or agents of land and the states should help the soldiers to select farms which are productive and suited to the crops they desire to grow.

The suggestions made by George H. Stevenson, President of the Baltimore Farm Farm Loan Bank, for establishing the value of the land, and for financing the soldier in farming, should prove epuitable and practical. (See "Maryland Farmer," Vol. 1, No. 9, November 15, 1918.)

Before the soldiers who have not had practical farm experience are permitted to engage in farming, they should be given a course of instructions, under the auspices of the U. S. Government Department for the re-education of soldiers, at the gricultural Colleges, in the States where they expect to locate.

No. 22.—A Splendid Community Show at Frederick.

already provided with good roads, schools and churches, and other things which contribute to making life more congenial.

8. Place most of the men near the big centers of population, thus giving them good markets for their products. This would be of mutual advantage to the producer and consmer.

This plan of locating the soldiers on farms or parts of farms which are already improved should not prevent the reclaiming of some areas by irrigation, drainage and clearing, and the infiltration process of distribution should not prevent the establishment of colonies or cooperative communities.

To handle all the matters which would likely come up in connection with a project of this nature would require a close cooperation of the States and the Federal Government. The States should establish in connection with some of their existing agencies—probably the State Board of Agriculture—a reclamation service, to cooperate with the U. S. Reclamation Service.

The plan for the reclamation service, as outlined by Dr. T. B. Symons in the "Maryland Farmer" should meet this requirement. (See Vol. No. 5, October 18, 1918.)

The land should be placed at the disposal of the soldiers at as low a price and upon as good terms as possible. The states should protect soldiers from being imposed upon by owners or agents of land and the states should help the soldiers to select farms which are productive and suited to the crops they desire to grow.

The suggestions made by George H. Stevenson, President of the Baltimore Farm Farm Loan Bank, for establishing the value of the land, and for financing the soldier in farming, should prove epuitable and practical. (See "Maryland Farmer," Vol. 1, No. 9, November 15, 1918.)

Before the soldiers who have not had practical farm experience are permitted to engage in farming, they should be given a course of instructions, under the auspices of the U. S. Government Department for the re-education of soldiers, at the gricultural Colleges, in the States where they expect to locate.

No. 22.—A Splendid Community Show at Frederick.

This training should be supplemented by supervision for at least one year by the Extension Service and the County Agent.

In considering the whole question of the rehabilitation of returned soldiers the policy pursued should be such as will increase his efficiency and provide for his ultimate success and happiness.

SECRETARY SYMONS: I present the report and recommendation of the Executive Council on the nomination of officers of the Society for the ensuing year, as follows:

President—E. P. Cohill.....Hancock
Vice-President—Asa B. Gardiner.....Baltimore
Secretary-Treasurer—T. B. Symons....College Park

It is understood that the constitution provides that nomination can be made from the floor.

PRESIDENT HARRISON: You have heard the recommendation of the Executive Council.

MR. MORRISON: I move that the report be adopted and the officers elected in regular manner; seconded.

PRESIDENT HARRISON: You have heard the motion; all in favor say aye; opposed, no. The motion was carried. The officers above were elected by ballot cast by the Secretary.

Mr. Bomberger then presented the following resolution:

WHEREAS, Mr. Orlando Harrison, for two years President of the Maryland Agricultural Society, is about to retire from that office; and,

WHEREAS, During the incumbency of Mr. Harrison he has been untiring in his efforts to make effective the plans of the Agricultural Society and the extension of the influence of the organization; and,

WHEREAS, Mr. Harrison, as a member of the Maryland Senate, has at all times used his influence effectively in securing the passage of legislation for the advancement of our agricultural and horticultural interests.

***Be it resolved,* That the Maryland Agricultural Society express our appreciation of the services rendered by Mr. Harrison to our Society and to agriculture and horticulture of Maryland;**

***And be it resolved,* That these resolutions be spread upon the minutes of the Society and that a copy of the same be sent to Mr. Harrison.**

MR. COHILL: I wish I had an hour to say what I would like to say to you about President Harrison. He is one of the charter members of this Association and started with us, when

we could take all we had in a wheelbarrow, and has stayed by us through thick and thin to the very last.

Mr. Morrison moved that the resolution be adopted. The motion was seconded and carried, with a rising vote.

PRESIDENT HARRISON: I certainly thank you for this vote. It goes without saying that it has been the greatest pleasure of my life to take an active part in anything pertaining to agriculture, whether in my home, or in the City of Baltimore, or in the Maryland Legislature at Annapolis. The only way that the farmer can succeed is to have the farmers come down to Annapolis and see what the men do down there. They will promise all things in the election, but when we get down to the actual vote as to what is for the best interests of the farmer, a very small per cent. down at Annapolis do the right thing. That is the weak feature about us. We get week-kneed when we come down to the actual needs of the farmer. Had it not been for the assistance of the men now in this building we would not have accomplished one hundredth part of that we have in the past ten years in agriculture. It is the duty of every Maryland citizen to go down and see what you send to the legislative halls, and see to it that they carry out what they agreed to do before election.

The meeting then adjourned.

MARYLAND AGRICULTURAL SOCIETY

Affiliated Meeting

LABOR-SAVING FARM MACHINERY

WEDNESDAY, DECEMBER 11th, at 2.00 P. M.

President Orlando Harrison called the meeting to order and introduced Mr. F. A. Wirt, of the Extension Service, Maryland State College of Agriculture, who read the first prize-winning tractor report: "Tractor Experiences," by L. B. Balderson, Colora, Maryland.

TRACTOR EXPERIENCES.

By L. B. BALDERSON, Colora, Md.

The week that Congress declared that a state of war existed between our country and Germany, we ordered a 10-20 farm tractor, and a three-bottom plow (twelve-inch bottom), which the dealers promised to deliver by the middle of May. Our decision to purchase a tractor at that time was made precipitately. In the early winter we had obtained catalogs and information about nearly all makes which had seen a few years' successful service. However, we came to no decision to purchase, believing the tractor unsuited to rolling, stony hills of this section. We made an unsuccessful effort to locate a good team of horses and then decided to curtail production and do what we could with the power at hand. At this juncture a shrewd tractor dealer saw his opportunity, visited our farm and found me in the field where I was doing a good job with a three-head sulky plow. I had been at the job, day after day, thinking of these tractors on the smooth, level plans of the West, and wondering when they would get something to conquer our hills and stones. To make a long story short, the dealer claimed his machine would do the work "and it will plow that hill, too," he said. I immediately responded, "I would not expect to use it on this hill, I would be satisfied if it would handle the eighty acres yonder." We placed the order and after some delay the tractor arrived. Although it was rather late, instead of curtailing production, we seeded extra acreage of corn. The field corn was soft at harvest, but thirty acres of sweet corn planted quite late brought a gross return which paid for the machine.

In a sense, the tractor was a failure in the eyes of the community, for our late work meant poor crops, but we were well pleased. We saw the possibilities of another year. Our tractor did every job we asked of it, and did it well. It plowed the ground and harrowed it, pulled off rocks, and pulled out stumps and hedges. It graded roads, loaded hay, cut the wheat, ran the thresher, ensilage cutter, baler, feed mill and saw. It pulled down old fences and stretched new, so we were ready to make good when the 1918 season opened.

With only two good teams on the place, we started for a banner year. We seeded thirteen acres of oats, which made seventy-five bushels of thirty-eight-pound oats; thirty-two acres of field corn, which averaged fifty bushels, and twenty-three acres of sugar corn, which averaged over two tons. The yield of corn being much above the average for the neighborhood, although they were low on account of the extreme drought.

In plowing alone 113 man-hours did as much work, and better, than 242 man-hours accomplished in 1916, when all our plowing was done by three-horse sulky plows. Although this shows such a saving over one-half in man-power needed to accomplish a given job in a given length of time, it does not show the real value of the tractor. Let us look back over our spring planting and see what things conspired to give our corn crop such a start that neighbors called it the "finest in the neighborhood," and asked: "How do you make corn grow when there is not any rain?" While I plowed and harrowed the sod ground with the tractor, the teams covered the stalk fields with manure, a job which usually has had to wait until the sod ground is seeded. On the second of May the corn planter started and the tractor began plowing the stalk ground. The second team was free for the roller. By the time the sod ground was seeded, the stalk fields were ready for the harrow and planter. Thus we find that it was not necessarily the ability to replace a certain number of men, but rather the ability to do the work quickly at the most propitious time, which makes the tractor a necessity upon the farm. In addition, we obviated the use of one team and saved the strength and spirits of our other horses, enabling them to do better work on the lighter farm implements.

The cost of plowing with a tractor varies with plowing conditions. Our average cost per acre for 150 acres has been nearly seventy cents for oil and fuel, one dollar for labor and fifty cents for interest, depreciation, repairs, etc. These costs are all based on a safe margin. Roughly speaking, the actual yearly cost of running a tractor under our conditions might be summed up as follows: The cost of fuel and oil is equal to the feed of one horse; the repairs equal to the cost of

shoeing and harness repairs for four head of horses, and the time spent in cleaning, greasing, filling with fuel and water about the same as the time spent in feeding, watering, grooming, harnessing and tending stable for one horse. This last item for the tractor, however, is often bunched in a busy time while the work with the horse is spread out through the whole year. There is evidently then a saving both in fuel cost and in labor where the tractor is used but as I have shown earlier in this article, it is in *doing the work at the right time* that the tractor enables one to obtain the best yields. It is the tractor that enables the farmer to carry the peak load over the peak season.

About one-half of our field work is plowing, the heavy work of discing being of next importance. In addition to these two items, we have found that the tractor's slow, steady, powerful pull is ideal for loading hay and its faster speed makes a never tiring team at the binder. When we purchased the tractor we realized that proper belt power was of the utmost importance for us, therefore, we wanted a slow speed, heavy duty engine and we are certainly pleased with our selection. For twenty-five days this fall it ran the ensilage cutter, handling all the cobs and husks from a sweet corn cannery—the product of five hundred acres. It threshed oats and wheat. During the winter its jobs are numerous: shredding stover, grinding feed, sawing wood and baling hay. Its value on the small belt is not realized until experienced. With the old portable engine "setting up" frequently consumed as much time and energy as the job itself. Now, if I wish to grind a ton of feed, I crank her over and in three minutes I am in position, belt on, set and grinding corn. In less than two hours the job is done and the tractor back in the shed—a one-man job throughout.

We have found the tractor the ideal power for road-scraping, doing a good steady job.

Most of the medium to larger sized, dairy farm in this neighborhood have their own gas engine for their own work and I believe that no one at this time should consider the purchase of a portable engine until he has made sure that he cannot utilize a tractor for the work. If the proper

machine is purchased, it will do better belt work than a portable engine and at no more cost for operation.

Many farmers in our neighborhood have beautiful fields for tractor use, ideal soil conditions, and in some instances good help to handle the machine. These men will doubtless in a very few years be tractor owners. Some few farmers lack the small amount of mechanical knowledge necessary and without special training should be discouraged from attempting tractor farming. Some of our farm sare too rough and hilly for economical tractor work, not that a tractor cannot negotiate the grade (it is a marvelous hill climber), but the task is much harder on the engine, the slippage is harder on the soil and the operation is harder on the man.

In this locality I would consider a slow-speed engine, geared rather low, say two miles per hour, and pulling three bottoms would do better with less plow breakage than a faster machine with two bottoms. A 10-20 H. P. seems to be large enough for our conditions and a twelve-inch plow does splendid work, except in very trashy ground where a two-bottom, sixteen-inch plow would be better.

To give an idea of costs, I have added the following table based on the year's work. The costs include all delays due to stony, trashy ground, finishing field, etc. In discing we use a six-foot triple disc with smoothing harrow following:

	Plowing.	*Discing.*	*Belt Work.*
Kerosene, per hour—gallons.....	2.08	2.3	1.7
Oil, per hour—quarts.....	.92	1.1	.825
Fuel and oil cost, per hour.....	30.12	34.0	25.5
Fuel and oil cost, per hour.....	68.00	31.4	.....
Acres, per hour.....	.44	1.15	.....

Finally in regard to the amount of use made of the tractor. During eleven months in 1918 the tractor has worked all or parts of 119 days—an average of almost three days each week.

PRESIDENT ORLANDO HARRISON: We will now ask Mr. F. A. Wirt to read the second prize-winning tractor report: "Our Farm Tractor," by Sidney H. Karr, Hancock, Maryland.

OUR FARM TRACTOR.

By SYDNEY H. KARR, Hancock, Md.

Back in the early months of 1918, we, like other farmers and fruit growers, were confronted with the problem of getting our work done in spite of the thinning out of farm labor by army drafts and by state road, pipe line and railroad construction work. However, with the rapid advance in the price of hay and feed, and the scarcity of teams due to work, how could we manage to get the summer work done and still keep down expenses. "Why!" said the machinery salesman, "buy a tractor!" That was an idea, to be sure but one that did not at first appeal to us as practicable because of the rolling hillsides which constitutes our farm. When asked if their tractor would work on our farm the tractor salesman all offered to come out at our expense to inspect the ground with a view of offering advice. They, of course, all claimed that their machines would work over our land all right. Different salesmen submitted statistics and comparative test records to us by the yard. Several men spent much time in running down the machines made by competitor while each claimed superiority for his own make. But when asked if they would be willing to bring a tractor to our farms and hook to a harrow or plow to prove their statements, they zealously offered scores of apologies and hoped we understood that such a request from us was unreasonable, etc. What were the terms of purchase of these iron mules? Spot cash with order unless your dealer could handle your discountable notes. It was rather disconcerting. Tractors, the modern and feasible ones at least, were new, and none had been in use but a very few years. To purchase a tractor seemed like a plunge into the dark. However, the writer got on a train in March of the present year and went to Martinsburg where several makes of tractors are sold and may be seen in operation. And after much deliberation and comparative study of features, probable serviceability and cost, we finally purchased a Case 9-18. This machine has a four-cylinder motor designed for burning kerosene, a water filter for air taken into the carburetor (for cleaning air of

dust), and a selective type transmission gear shift which has two speeds forward and one reverse. The tractor and Oliver No. 78, three 12-inch base tractor gang plow, together with Bissel engine disc and two three-gang Oliver vineyard plows, was delivered to us on April 23rd. This report deals with the work done with this tractor and implements from then on until the present writing, November 23rd.

Records and data kept were for the purpose of figuring costs for entry in weekly reports of the orchard manager to the orchard company directors, but such records ceased on August 5th, due to the overburden of work in the peach harvest.

As we learned after a little use of our tractor, there are a great many problems connected with its successful operation. First, there is the question of an operator. We had employed a young married man for the year who was very eager to run the tractor. He was but eighteen years old, and although he had never run a tractor, he was handy with tools and learned things quickly. As he was the only one available at the time we thought we'd give him a trial. After a few weeks training he did very well until toward the end of the summer when he got tired of work in general. He then was enticed by a four dollar a day job on the state road and quit us without notice. The second problem is probably that of a proper hitch for the implement, and the third is that of how to handle the machine in the field. This last problem with us, is a large one because all of our land over which a tractor might run is set in peach or apple trees. Consequently the hillsides, the ditches or gutters and the turning at the ends all offer special opportunity for study.

We at first lost much time because the machine would not operate on pure kerosene in the cool air of the spring. But after we added about 20 per cent. gasoline to the fuel, and made the gas richer by opening the needle valve wider in the carburetor, the machine pulled very well. When we commenced work we had about 140 acres to plow at once. The land all had rye on it to be turned under for green manure, and the heads were commencing to form on the grain, so there was no time to lose. The orchard contains about 100

acres in peaches and 50 acres in apples, planted in solid blocks. All trees are about seven years old, except seven acres of apples, which are probably eleven or twelve years old. Some of the land is only gently rolling and some is pretty steep. In general the peach and apple orchards occupy each a parallel ridge, with a big hollow between them, and many minor hollows tributary to the large one. Just how much of the land we could till with the tractor, we could find out only by trying. Also just how big a ditch we could hurdle was a problem to solve by trial alone. As the first operation was plowing, it was simple to go as far down the hillsides with the plow as possible, and below this line plan to farm with mules; this we did. Imagination does not have to go far to tell one that by this method we were bound to get into many tight places, and we surely did. When we got to a place where the land was too sliding for engine work, it would tell us so by sliding and leaping down the hill sideways toward the next tree row until we were forced to unhook from the plow, go down the hill to turn around, come straight up and then back down to the plow and pull it up the hill out of trouble to more level ground. We lost a lot of time while we were determining the degree of slope the machine would crawl over, but finally we did get all around the farm, and after breaking a front axle by the trial method in ditch hurdling, we thought we knew pretty well what we could do. Although the engine was designed to pull two 14-inch plows, we purchased three 12-inch plows and found that we could pull them very well to a depth of four or five inches. To plow deeper would tear up tree roots, and 36 inches of furrow at a trip looked a lot better than 28 inches.

After plowing our next operation in the orchard was discing. At this work the tractor is in its prime. Our machine hauls a six-horse double-engine disc at three and one-half miles per hour, cutting an eight-foot swath and stirring the plowed soil to a depth of four inches or more. After discing once in the peach orchard, we put a short tongue on a lime spreader and limed the land. The rapidity with which we could go over ground with that lime spreader was amazing. The next job in the peach orchard was harrowing and

then more harrowing. We had two Forkner light-draft harrows. One alone was not wide enough to harrow a 16-foot row, so we took one side off of each harrow and joined the two frames together with eye-bolts and got an implement wide enough for our purpose. With this implement we can go once in a row, set the teeth down deep to tear up the soil for three to four inches, and go right along on high gear at three and one-half miles per hour. Of the 100 acres of peach orchard we can harrow about 75 acres with the tractor in two full days and can get a deep dust mulch that will hold moisture in the soil. During the hot weather when man and team would spend most of the day in shade, the tractor is at its best and the harrowing gets done in shape and on time after a rain.

As the report blanks will show, we did various other work with the tractor, such as hauling lime, fertilizer, manure, sawing wood, etc. This fall, when labor was scarcer than ever, the writer ran the tractor and disc himself to get orchard and corn ground in shape for seeding to rye and alsike clover and accomplished the task over the 120 acres suitable for tractor operation. Without the tractor the work would have gone undone. After a summer's experience with a tractor, the writer is decidedly enthusiastic over the question. However, facts and figures are the only reliable source of information.

In a recapitulation of the reports attached to this paper, we find the facts set forth in the following table:

Hours plowed with tractor	Acres plowed with tractor	Cost per Hour	Cost per Acre	Cost team Pl. Hr.	Cost team Pl. Acre	Diff in acre cost
139	102	$1.50	$2.04	$0.51	$3.40	$1.36
Hours disced with tractor	**Acres disced with tractor**	**Cost per Hour**	**Cost per Acre**	**Cost team Disc Hour**	**Cost team Disc Acre**	
65	73	$1.07	$0.95	$0.95	$1.19	$0.24
Hours Harrowed Tract	**Acres Harrow with tractor**	**Cost per Hour**	**Cost per Acre**	**Cost team Harrow Hour**	**Cost team Harrow Acre**	

The per-hour costs shown in the table given above were made up as follows:

Tractor Plowing.

Cost of tractor—$1,300.00.		
*Interest, at 6 per cent	$78.00	
Depreciation, 20 per cent	260.00	
Repairs, 5 per cent	65.00	
	$303.00	— $.45
Used 700 hours per year	700	
Wages of operator		.25
Fuel and oil		.25
Total cost tractor per hour		$.95
Total cost plow per hour		.55
Total cost tractor plowing hour		$1.50

Cost of Tractor Plow.

Cost of plow—$220.00.		
*Interest, at 6 per cent	$13.20	
Depreciation, 10 per cent	22.00	
Used 150 hours per year	$35.20	— $.24
	150	
Plow points		$.15
Repairs		.16
Total cost plow per hour		$0.55

Interest, depreciation and repair of disc, divided by hours used per year:

Gives hour cost of	$.12
Hour cost of tractor	.95
Hour cost of discing	$1.07

The charge for the use of our double harrow figures out to be the same as that for the disc.

Cost of Team Plowing.

Feed per hour	$0.15
Interest, deprec., etc.	.03
Wages, teamster	.25
Shoeing	.015

Cost of Horse Plow.

Interest, deprec., etc.	$.01
Points	.045
Repairs	.01
Total hour cost	$0.51

Cost of Team Discing.

In discing with teams we would have to use two teams of three horses each. Each team would pull half of the engine disc or its equivalent. The cost would be figured as follows:

*NOTE.—Many accountants figure the interest charge on one-half the first cost which, in this case, would reduce the interest charge by one-half.

Feed, interest, depreciation, shoeing	$0.195	
Multiply by three	3	
	.585	
Wages of driver	.25	
Cost for use of disc	.12	
Total hour cost of team discing	$0.955–	$1.19
Divide by .8 acres disced in hour	8	
Total cost of team discing, acre	$1.19	

Cost of Team Harrowing.

In figuring this cost it was taken for granted that we could hook four-head of mules to the same double harrow that the tractor was hooked to, and could do the work in that way. If the harrow was to be broken up into its two halves or if one-half of the implement was used to go through the tree row twice, the cost would be somewhat higher and the cultivation not so deep.

Interest, depreciation, shoeing, feed	$0.38
Cost of harrow	.12
Wages of driver	.25
Total cost per hour for team harrowing	$0.75

The table shows in each case a saving by the use of the tractor. This result is in itself satisfactory, but more than this there are factors which enter as benefits of tractor work which are tangible but not easily figured in exact amounts. For instance, the total man-power used in accomplishing the work with the tractor, as shown on report blanks, was 565 hours, while to do the same work with teams the total man-power required would have been 1,592 hours, or a saving by the tractor method of 1,027 hours over a total of 90 days, which means a saving of the labor of two men.

In the second place, to accomplish the work done by the tractor with the use of teams, after a careful study of the table, a good estimate would call for 2,050 team hours, or 205 team days, or the use of three two-horse teams during the 90 days.

As a third instance, it might be well to mention the uses of a tractor for belt work. The average farm has but little work to do but even we have found much comfort in our ability to saw wood for our tenants when needed. This fall we ripped out lath for reshingling our barn roof with the tractor. We have been considering the purchase of a lime pulverizer so that we may grind our lime rock for the soil, but

definite arrangements for the purchase of the grinder have not yet been made. For one who has various machines demanding belt-power, the tractor may find use during most of the winter at a profit.

The influence of tractor tillage on crop yields is hard to figure in our case, for we have no comparative tests, but we are sure the tractor work improved both the quantity and quality of our crop of peaches. We had a six weeks' drouth here in the critical period in July and early August. With the tractor we were able to maintain a four to five inch dust mulch which protected our soil against evaporation. Even at the end of the drouth period one could kick down through the top dust coating and find moist loam beneath. The protection was also indicated by the tree foliage, which kept deep green and healthy, showing no lack of moisture. Orchards of neighbors that did not have our deep cultivation showed considerable drouth injury. Plentiful moisture in the soil made more baskets of better fruit for us, and thus increased the yield.

During the summer we had numerous visitors who came to inspect the tractor work. Some of these men bought tractors on our recommendation. Most of the men interested were orchard men, who would need a tractor for cultivation of an orchard in the summer time as well as for spring and fall work. For such men and for use on land not generally steeper than ours, we believe the four-wheel type of tractor may be used economically if the center of gravity is not too high up on the machine.

It costs money to learn these things first-handed, so we hope that this article may come to the notice of some who are considering the tractor question, and that it may give them still a few more ideas on the much-talked subject of "The Farm Tractor."

PRESIDENT HARRISON: It is very interesting and instructive to hear personal reports from farmers in the use of tractors. This meeting is ideal in that all interests are represented. We will now have a special treat in hearing "What the Tractor Can Do," by Major Chase, a man of national reputation.

WHAT THE TRACTOR CAN DO.

MAJOR L. W. CHASE, Ordnance Department, U. S. A.

Gentlemen:

I shall have to explain myself just a trifle before talking to you people, because I am clear out of my element. First, I don't know whether I shall talk to you as a man in the Ordnance Department of the Army, or as a professor of the University of Nebraska, or as a farmer. I happen to be all of those just at the present time. I expect some time next spring to get out of the army, and then I will be either a professor or a farmer, so then you will know something about what my whole work has been.

A MEMBER: Give us the real farmer part today.

MAJOR CHASE: I am not an accomplished orator, I am very much more at home with my coat off and with some grease on my hands or some dirt on my shoes than up on the stage talking to people, so the talk will be more about some statement of facts, which I have not forgotten in the last six months than it will be eloquent. I might state, if it does not take too long, that I would just as soon have you any time come right in and ask me any questions, and I will endeavor to answer. I shall have to apologize for I cannot give you anything anywhere as good as Professor Wirt just read to you from the papers which your boys wrote here in Maryland.

There is one thing that you have to contend with here in the East that we do not have to contend with in the West, and that is the factory. We are clear beyond that over the Mississippi River. It is either the farmer or nothing with us. It is either one of the other, we can't try to farm and do something else, too. Down here you have to cope with a different situation. You have to try everything to keep such young men as these have shown themselves to be on the farm. They will be worth without any doubt ten times, I believe one hundred times more to civilization right on the farm than they ever will be in any factory. That can be put up anywhere, I don't care where. I speak advisedly on that. I have been in the factories, I worked there two years before

I went to the University of Nebraska. I might say, further, that I was born in Vermont and grew up on a Nebraska farm, and worked with a large gas engine manufacturing factory two years, and have since then (1905-6) been working with the University of Nebraska. My work has been connected with the tractor engineering ever since we tried to plow with steam. I was five times in the Winnipeg Tractor Show, and have been connected with every tractor demonstration in the West since they started. With that much off of our hands, let us get down to the subject in hand.

What can the tractor do? I am going to change that for just a few minutes, and talk on "Is the Tractor a Success?" Some of you come back and state it is, and, of course, the chances are that there are several tractor dealers here in the audience, and, of course, they will state that it is a success. But some of you farmers who have tried them will state that they are not a success.

Before I can prove to you whether it is a success or not, I will go back and start again "Is the Tractor Farmer a Success?" I will answer "Yes" and "No," or "No" and "Yes." It depends entirely upon how big a man your farmer is. That might seem strange. I used to think that an engineer was somebody who could run a steam engine. When I was a boy on the farm I wanted to go to the University and learn to be a locomotive engineer, I thought that was the height of a man's ambition. Now, a good, successful farmer is a much bigger engineer with a locomotive, than the engineer who will get $200 to $350 a month. So when I told my father what I wanted to do—he was a man of not very much education but a man of pretty good judgment, I found out afterwards—he said: "If that is all you can see in engineering, you had better stay on the farm, you will make a poor engineer." Well, I did go to the University, but I cannot get away from the farm. Now my sympathies are with the farmer. We are from the West, and your conditions are different down here. I have learned enough in the two papers read this afternoon to know that there is very little use for us Western farmers to tell you Eastern farmers how to use tractors, altho we have been using them ten or

twelve years. But I would like to give you some of our experience.

Now, the first thing is that a farmer must be a big man. If a farmer has a boy that is able to fix a bicycle, and he thinks he is going to be a good mechanic because he did that, he is ruining the boy because 95% of the bicycle machinists are failures as tractor farmers. I don't believe there is a successful tractor farmer in Nebraska, Kansas and Iowa who was a "tucker-whistle" or would-be mechanic when he was a boy. Why is it that a "tucker-whistle" cannot be a tractor farmer? Because it is a big job. You cannot start today and plan a tractor farm and make a success of it next year. Men did not make a success the first year or the second year, and perhaps in five years. He will be ashamed of his second year's report, because it is a job that you have got to commence and work with for not only months but years in advance. Now the farmers that I see here in Maryland when I drive around have this trouble—you have got to start in by cleaning up your fields. You have been used to farming in rather small, irregular ways; you will have a bunch of brush right in the middle of the field that you have spent months or years in driving around. The first thing to do is to use that tractor and clean up your field. Don't use a spade, use a tractor for cleaning up that mess of brush. If it needs to be drained after you have got it cleaned up, use your tractor to drain that field, but drain it permanently, don't fix it temporarily for this year only. Anybody who proposes to farm with tractors has to clean up the land and get the water off it.

One or two of the points that I want you to get in mind, because this is a business proposition right straight through, is to get the ideas of those men that have used tractors themselves. Read your agricultural papers if they are founded on facts, and then follow up your Agricultural College, support them so that they can get men in there who will in turn help you fellows with your farming, and help you make your farming a success, so you get dollars and cents, and not just a pretty picture. You have a good one here, these men are paid by you to go from this farm to that farm, and pick up

No. 3.—Corn Section in the State Exhibit held in conjunction with Southern States Exhibition, Baltimore, December 8-12, 1918.

twelve years. But I would like to give you some of our experience.

Now, the first thing is that a farmer must be a big man. If a farmer has a boy that is able to fix a bicycle, and he thinks he is going to be a good mechanic because he did that, he is ruining the boy because 95% of the bicycle machinists are failures as tractor farmers. I don't believe there is a successful tractor farmer in Nebraska, Kansas and Iowa who was a "tucker-whistle" or would-be mechanic when he was a boy. Why is it that a "tucker-whistle" cannot be a tractor farmer? Because it is a big job. You cannot start today and plan a tractor farm and make a success of it next year. Men did not make a success the first year or the second year, and perhaps in five years. He will be ashamed of his second year's report, because it is a job that you have got to commence and work with for not only months but years in advance. Now the farmers that I see here in Maryland when I drive around have this trouble—you have got to start in by cleaning up your fields. You have been used to farming in rather small, irregular ways; you will have a bunch of brush right in the middle of the field that you have spent months or years in driving around. The first thing to do is to use that tractor and clean up your field. Don't use a spade, use a tractor for cleaning up that mess of brush. If it needs to be drained after you have got it cleaned up, use your tractor to drain that field, but drain it permanently, don't fix it temporarily for this year only. Anybody who proposes to farm with tractors has to clean up the land and get the water off it.

One or two of the points that I want you to get in mind, because this is a business proposition right straight through, is to get the ideas of those men that have used tractors themselves. Read your agricultural papers if they are founded on facts, and then follow up your Agricultural College, support them so that they can get men in there who will in turn help you fellows with your farming, and help you make your farming a success, so you get dollars and cents, and not just a pretty picture. You have a good one here, these men are paid by you to go from this farm to that farm, and pick up

No. 3.—Corn Section in the State Exhibit held in conjunction with Southern States Exhibition, Baltimore, December 8-12, 1918.

an idea over here and take it to you over there, so that it is a pretty good element to have in your community.

So without taking much more time I want to emphasize this point—don't jump into the tractor game too hastily. We have lost thousands of dollars because our farmers did. It is a good thing, because the proper tractor in the proper hands is a success, but if you get a poor tractor in good hands you have spoiled a mighty good farmer; if you get a good tractor in poor hands you have spoiled a good machine; if you get a good tractor in the hands of a good man you are going to make a success of tractor farming. But you have got to work. You can't sit at a desk, and ride to town in an automobile and expect some colored man or would-be farmer to do your farming for you. If you are going to use tractors, it will take as much time to take care of them as of a horse. I think that is true, and a rather fair estimate. Now, remember, that it takes a good man to take care of that tractor, and a man with forethought. I am going to ask how many of you men start to town in your automobile if it is not working perfectly before you start. I don't see many hands going up. And why? Because you don't want to be hauled in, you would be ashamed of it. How many of you ever took the trouble to fix your cultivator before it broke in two? None of you. I never did. And when it broke you were usually a half-mile from the fence. You would have to hunt a stone, or twist some wire and fix it up, and that is an illustration of the tractor business. Perhaps it would have cost you fifteen cents for new parts, and you could put them on in fifteen minutes, and your time would be worth about a cent a minute —thirty cents for fixing it. When you are in the field, your team, yourself and your cultivator are all tied up, and to save that thirty cents you will spend sixty. You can't do that with tractor farming. You have got to anticipate, got to listen carefully to every little thing, watch for little pieces of iron that are commencing to cut, and just as quick as you see that something is wrong, you hear a little sound, you have got to fix it, you have got to anticipate all the troubles of a tractor at least a day in advance of when they are going to happen. Always fix up your tractor in the winter time so it will run

through the next season. Those are some of the things that you have got to develop. Yes, I don't believe you can leave it to the average hired man, certainly no colored man.

Let's get down a little bit more to the tractor itself. In the first place, the subject is "What Will the Tractor Do?" I will assume from now on that the tractor is in the proper hands. If it is not in the proper hands, you will find that it will be pretty expensive in running it. I will then assume that the tractor is in proper hands. I will state that the tractor, properly handled, will do everything that horses will do excepting going through mires and up enormous grades, but properly handled it will do everything that horses will do. Furthermore, it will do it properly handled—there is a human equasion that enters into the tractor farming game bigger than anything else. An automobile is not in it. To say that you have made a success of an automobile does not mean that you will make a success of a tractor, but you have got to handle and study and do it in a big way, never fixing the tractor the way you would your Ford. You can get by with a Ford by using barbed wire and barrel staves, and such things as that. I have seen them all, I have used them, lots of them. I made a spring one time out of barrel staves. You can't do that with a tractor, don't patch up anything with a tractor; that is, if you have a connection wire that is a little bit loose, don't botch the job; fix it up right, fix it as though it was a $2,000 engine, and then your tractor will be a success.

As to what a tractor will do, I am going to give you the experience of lots of our farmers. One of our farmers got a tractor a few years ago and made a remarkable record. He was what I call a "super-educated" farmer. That might sound funny coming from a man being a college professor, but you can ruin lots of farmers by super-educating them, also lots of college professors by super-education. This man happened to be an Eastern agricultural college man, who came into the West with the expectation of showing the farmers of the West how to farm. Well, he used his tractor 118 days that first year with only $5.75 for repairs, and made a remarkable record. That man hauled all of his ice with his

tractor, plowed all of his land, hauled his hay to the barn, tried to haul his bundles to the threshing machine. The machine was standing still most of the time waiting for the bundles. He hauled five to seven loads of coal for himself, and for his neighbor; hauled manure, and that is one thing that I did not believe in until a year ago.

We had some tests in Nebraska. I am sorry that I haven't the data here with me. One man with a tractor would haul from two to four loads of manure more a day than he would with horses; hauled the manure at the rate of $2.00 a day cheaper than he does with horses. I don't know whether that would be true with you or not. Our methods are different, but hauling manure with a tractor was a success in the West. The young man who furnished these figures did it at a very great expense; it cost $10,000 to get the information that I have around here, but I am not going to give it all to you. These are accurate, however, and we have eliminated all the possible errors, and have just taken fuel consumption while the machine was actually in use. (Major L. W. Chase then read and explained figures on the cost of using different fuels in present tractors which could not be taken down by the public stenographer.)

I might go on and give you a lot more of this, but I want to call your attention to this fact that today the good kerosene tractors are more successful than the best gasoline tractors. One man stated he had a little trouble with his kerosene tractor as the air was too cool. You are apt to have that trouble. The next thing is to heat up your kerosene, fix it so warm that it even gets hot, you can't get it too hot. Don't have something that will heat and carry that gas around to the engine cylinders. It gets in the engine cylinder, and there is not much use in your heating it at all. The kerosene does not gassify, simply vaporizes, and you have to let it cool off. Another thing about using kerosene, I did not believe until a year ago last summer that kerosene would cool on anything but a large cylinder engine, but I had to switch all around last summer and state that kerosene burns cool in a properly designed engine in small cylinders. We will take a cylinder that is seven inches in diameter. If

you are going to put inside that cylinder a tablespoonful of kerosene and expect that to burn, it will burn and the next charge that comes in is going to ignite, and then you pour in some water, but if you want to save kerosene you don't do that at all. You burn water to cool your cylinder down so you can use kerosene, so you can put water in there with small cylinder half that large, take in a charge of kerosene and the walls of the engine will cool. But I would by all means use kerosene, I would not think of buying anything else but kerosene.

There are two ways of putting any kind of a machine on the market. One way is to make the farmer pay for the information that the manufacturer wants direct, and the other is indirectly. Now, I am going to state right off the bat that you want to pay for that information indirectly. It does not come in quite as big chunks. If I knew that I was buying a tractor engine, and that tractor was not produced and put on the market in about this course of events, I never would buy it. Our best farm machinery has been developed and put on the market in this way—I allude not only to tractors but to automobiles—Here is what a good tractor manufacturing company will do: Have the engineer design the tractor, then they will build that tractor. They will take it into far-off places where you and nobody else will know about it. The engineer will go out and operate that tractor, he will improve that tractor where he finds any imperfections. Then it goes back to the factory and is rebuilt. Next five or ten are sent out in the hands of good mechanics and operated for a season, and then these men report on the imperfections of that tractor. The tractors will come back and fifty more tractors are built. They are sent out and sold to good farmers, farmers that will keep the records, the same as these men have done. These farmers are watched by the dealers and merchants, and the records of those fifty tractors are all carefully kept. Then five hundred machines are manufactured and sent out and watched for imperfections. That is four times before they really come back and are improved and are kept on a production basis. When I was connected with a certain gas engine manufacturer on

the testing floor—they turned out from four to eight engines a day, and not a single one stopped. I thought that was a wonderful engine, and I went to the University of Nebraska and commenced to talk up that engine. Those things are in the hands of the elevator, electric light plants, and were not a success, and why? Simply because I as an expert did a lot of little things to that engine, and when it got into the hands of a man who was not an expert he would not do them. All of you have had that trouble with your automobile. I will tell you what we used to tell our farmers—if the gas engine would not start at the first crank, fill your pipe and sit down on the doorsteps and smoke up a pipeful of tobacco, and after the pipeful is all smoked up, the automobile will start. When you first cranked it you flooded it, and that gas gradually works out and then it will start. Those things will come up when you get your new machine in the hands of inexperienced operators. No man on earth wants to buy any kind of machine but what it is fool-proof, and then he will have trouble enough.

I will cite you another illustration. The Buick Company started with the old two-cylinder car, and they carried that along as a side line until they built up a good four-cylinder car—they had two successes. All at once they got out a six-cylinder car, and put it on the market and tried to make a success of it. They came pretty near getting Charlie Nash's goat—he was at that time at the head of the General Motors Company. They jumped right over to the six-cylinder car and expected to get by with it, but they did not do it.

The John Deere people were building and selling a successful manure spreader; they spent years and years in development. All at once they hit on the low-down manure spreader and took the trucks from the Success Spreader and put them on the new machine, and thought those trucks would be all right, but they went to pieces inside of two months on the low-down spreader. I could not see why it did not go on the low-down spreader as well as the old high, but tractor engines which have been tried out for one or two years have not been a success. If you want to get a successful tractor, don't take the tractor that comes on the market the first year

with a great lot of newspaper advertising—keep your hands off of it, keep your hands off of any tractor that has not been tried out for two or three years. Take that old tractor that C. W. Hart turned out—they would stand up and run day in and day out—those tractors did stand up because they just worked on one model.

MR. ROBERT CRAIN: Are they for sale now?

MAJOR CHASE: No, that is the reason why. They are not because the farmers put them out of business. Do you want to know why the farmers put them out of business? Because of the advertising of so many different kinds of tractors—of lighter tractors, and they would not get that great big one. Let me tell you, there is not a manufacturer that will manufacture anything that he knows is right unless he can sell it. Consequently, he is going to manufacture what he thinks the farmer is going to buy. If he knows that he can't make a tractor for $650 that is any good, and the farmers will not pay $1,000, he is going to manufacture that $650 tractor. He is going to make it for you if he has to make it out of pewter. You want to look out for that cheap tractor.

Now, take this example—R. T. Erickson, an old employe of mine—went to farming on his own hook. He was one of the most honest Swedes that I have ever met. He has a tractor that has been running for nine years. It cost Mr. Erickson $2,160, and he values the tractor today at $1,000. He explains in this article all about it. This tractor in commercial work netted him $9,618.97. I don't question that report one bit, because Mr. Erickson did not compile these figures until I requested him to about a year ago. He had all the records but he never compiled them. I know they were not doctored in any way. Mr. Erickson has paid for two sections of land in Texas and a half a section in Nebraska with that tractor.

DR. SYMONS: How many acres in a section?

MAJOR CHASE: Our land out in the West is laid out in blocks—640 acres to a section, with 16 acres taken off for roads—16 acres from fence line to fence line. Therefore, a quarter of a section is 160 acres, and two quarters 320 acres.

I want to bring up two or three points here with regard to the size of tractors. Don't get a tractor and use the same number of horses and produce the same number of crops. If you do, you had better just simply get along with the horses. Out in our country we use the gang plow. I notice that you have lots of walking plows, I saw them in lots of places in Maryland.

I want to bring up some of the points that are necessary if the farmer starts out in the spring to buy a tractor engine to meet all these conditions: In the first place, we plow shallow for orchards, about three inches deep. His tractor is going 2½ miles an hour—2.36 H. P.—7 horse-power tractor to put in his oats. Before he gets through the spring planting he will want to plow for corn. Lots of our farmers plow 4½ inches deep for corn. Instead of that same sized plow using 2.36—you have 10 H. P. tractor. The power that is required to pull the plow is generally one-half what is used up in the engine. It takes half that same power in your engine to pull your engine up in the ground.

Now, then, this farmer goes along late in the season and starts to plow for wheat, only plows six and a half inches deep—that will mean three or three and a half by seven tractor—7-14 tractor. A good farmer will plow eight inches deep, that is just normal in our country, and that requires a 9 H. P. to pull three plows, or it takes a 9-18 tractor to pull those tractors in good normal soil. It requires an 18-36 tractor to pull three plows about eight inches deep. If you use this 3½x7 tractor you will see that you will come up against it pretty hard before you get your season over. In your country you have some hills.

I am going to drop back to the six and a half average depth of plowing, with the tractors—you don't plow that deep with horses. In Washington the average is about two inches deep, some places it is four inches deep, skipped sometimes to two inches. With lots of the land that you farm here six and a half inches deep, two and a half miles an hour will require 14 H. P. or 14-28 tractor. Now, what is going to happen when we start up a grade, say 10%—a raise of 10 feet is a big grade for our country—a 10% grade is hard on

machines built for level countries, just to go up that grade takes 5 H. P. Put that on top of 14, and you have a 19 H. P. machine. We have got heavy soil, and if you go up a 10% grade, how are you going to do it. That calls for an awful big machine—a 19-38, which would be a 20-40 at the manufacturer's. By slowing up your engine, you can get along a great deal with that—instead of running those two and a half miles an hour, take 1.3—still that is a big outfit—14-28, some call it 12-24. I don't believe that here in this country you need much larger than 10-20, but if you do, then you have got to do something to your outfit.

I can't help but believe the time is coming when we are going down hills, not alongside of hills.

MAJOR CHASE: Our farmers have not found the three-wheeled tractor as good as the four-wheeled. The farmers like to have a tractor that is out on the land. That is about all we know in the West. Here is something that I hope that you will keep in mind when you are buying slow tractors. It might be here in the records that slow tractors are a good thing. You use your break pin when you hit a rock. We don't have very much demand for them. We sometimes hit an old post, sometimes blow out in the road, and need the break pin. They generally wear out before they break with us.

Here is the difference in the cost of plowing with the tractor going 2½ miles and the one going 1⅜ miles—the ratio is 8.5 to 6.5. There is an inverse ratio of 1¾ to 1.30.

In our country traction engineers are getting $5 to $8 a day. Just about the last thing I did was to recommend a man to go up into Montgomery to run a traction outfit for two years—he was to get $2,400 a year and all expense for himself and his family from Lincoln, Neb., and pay a man to assist him $150 a month.

A MEMBER: How many hours would he work a day?

MAJOR CHASE: Normally ten hours a day.

A MEMBER: Those professional men that you talk of, how many hours a day do they work?

MAJOR CHASE: Well, the average farm hand after he gets in the field only works 65 per cent. of the time.

A MEMBER: Some don't work at all, but they don't get much money.

MAJOR CHASE: As to the number of hours this man was to work—he was to be on hand day and night, to do double work, twenty-four hours a day. He was to take his turn on the tractor in the day time.

MR. CRAIN: Are there many of that kind of man for hire?

MAJOR CHASE: No, that is the reason that they were after this man. He was the same kind of man as this man Erickson that I was speaking of.

MR. CRAIN: Do you know anything about this Cleveland tractor that they talk so much about?

MAJOR L. W. CHASE: I am going to give you the only experience I have had in watching the Cleveland tractor. I am going to state where the Cleveland people fell down at first in advertising too much in the newspapers before they had developed the tractor. I have been told by some men, if not farmers, that the Cleveland tractor has overcome a lot of its imperfections. But the farmers are disappointed in it because it did not line up to other machinery. They were a little bit disappointed because it rode so hard. As to operation and going through bad ground, and such things, it seemed to me like it did. I saw it three or four times; I did not see their plans in writing. I have ridden on some of these machines that have been going over to France; it is no joke to ride on one of those machines.

MR. CRAIN: How many of these tractors did we send abroad?

MAJOR CHASE: I could not say how many.

MR. CRAIN: By the thousands?

MAJOR CHASE: Yes.

MR. CRAIN: What is the Government going to do with them when the war is over

MAJOR CHASE: There might be a chance for farmers to buy those tractors, but lots of them are used in France, and they will try to dispose of them in Europe. The people who have been making these tractors turned all their output into Europe since 1914. Those tractors have demonstrated what they can and cannot do.

MR. CRAIN: Won't the Government have a report upon these tractors?

MAJOR CHASE: If the Government furnishes reports as to what they will actually do, that is something that I would like to get hold of myself. I am going to try to get hold of it before I get out of the service. But remember, in the first place, that the Government makes a pretty rigid test, and in the second place that the men operating these tractors are all trained for months. We have been running a school in Nebraska, where 300 men spend from two to six months learning how to drive tractors. Then the Government carries along with these tractors a great big supply house, and repair house, so that when anything does go wrong, all kinds of men get around these tractors to fix them up.

MR. CRAIN: Yes, I have found that so with my tractor.

MAJOR CHASE: I am going to tell you one thing, they developed a pretty high-speed caterpillar tractor.

A MEMBER: Did the students of the tractors follow the machines overseas?

MAJOR CHASE: Not all of them; lots of them have been picked out—the best men that they have—there is a much larger army in the United States than over in France, being trained all the time to go overseas.

MR. WALKER: We have a great deal of soil in Maryland that is quite light. We have had difficulty in getting the right kind of tractor. We have some spots that have never seen the light. Is it possible to get a tractor of the caterpillar type that would overcome that difficulty? I believe probably all farmers—I am speaking not of men who have large acreages, but fields of from one hundred to one hundred and fifty acres with no bad spots in them, all cleared land, but soil rather light, so they have not been able to pull the plow, if you put them down to six or eight inches it would go in the light spots but would not go in a hard spot.

MAJOR CHASE: If you will pay for caterpillar types of tractor—some of the caterpillar manufacturers can build a good tractor. If you will pay for those tractors, I believe that the caterpillar tractor will do that, but it has its limits. I do not believe that its limits are much worse with the tractors than

it is with the horse. It is a question whether it is a paying proposition to spend the money to build a tractor just for those places.

MAJOR CHASE: We have this same thing, some light clay soil, so light that the wheels will just bury themselves, and then to cap the climax right along next to that a bunch of heavy gumbo soil, yellow sticky clay. Our gumbo soil sticks together like putty, and gets so dry it cracks open, and is so spotted it looks like the dapples on a dark grey horse. Soil? We have lots of it. We are up against it.

I gave a talk about this in the western part of the State. One man said: "I have cultivated my corn with tractor engines for five years." I wanted to call him for that. He said he had an engine so built that it straddles two rows, runs on the sides of two ridges and straddles one ridge, pulls two with those two other disks or cultivators—four rows at once. Does it the first two times, he said it was all right, simply raised in the same place and used two riding cultivators.

We work our proposition a little bit different from you folks. Out there it is the most dollars that one man can develop, and if we can get more dollars by handling more land then they get more land.

A MEMBER: Has the Moline only two wheels?

MAJOR CHASE: The Moline only has two wheels. The Moline Universal. We haven't any of the new ones. The old Moline was too small for our country. All of those different types I believe will be successful when the imperfections are worked out. To date they have not worked them out sufficiently. We have not used those Molines in our country.

A MEMBER: But how about corn?

MR. WIRT: Some are using it for cultivating corn. That is one of the things that the farmer has to work out for himself.

MAJOR CHASE: One of our largest companies spent lots of money developing a plow that was self-propelling, but it simply tore the soil all to pieces. Three or four of ther were manufactured, but they never came on the market.

MR. CRAIN: I would like to move that we request Major Chase to sell his farm in Nebraska, and that we buy him a farm in Maryland and ask him to come here to live.

DR. SYMONS: I move a rising vote of thanks for Major Chase. Rising vote of thanks.

PRESIDENT HARRISON: We will now hear from Mr. Wm. M. Pogue, President of the Eastern I. and V. D. Association, on "Farm Machinery from the Dealer's Standpoint."

FARM MACHINERY FROM THE DEALER'S STANDPOINT.

WILLIAM M. POGUE,

President Eastern I. and V. D. Association.

I don't think you want to hear much from a little cross-country dealer, but when Mr. Wirt asked me to say something at this meeting from a dealer's standpoint, I felt that though there were plenty of men better qualified to represent our end of the game that I was ready to do my part.

I want to call your attention particularly to the service rendered. I think that is one thing in which every farmer as well as dealer is interested, the dealer from a financial standpoint, and you will find that the farmer is interested from that standpoint also. In the last few years farm machinery and implements have been distributed and sold throughout the country by two classes of agents. One class of agent, we will say, was divided into two groups, the catalog house and the implement manufacturer who sold direct to the farmer. The other class is the blacksmith, the general store agent and the farm agent. I know it is a well-known fact that the implement dealer, the catalog house and the manufacturer who sells direct cannot render you any service. He sells no line of repairs, and as Major Chase has said your machine don't break down at the right time; it breaks down in the field when you are doing your work, where you have no repairs and nobody to give you any assistance; and the same thing applies to the farm agent, the blacksmith agent, and what we call the general store agent. These classes of men won't always take on the agency for a line of implements for their own selfish interest, or through the manufacturer

or some agent who wants to get his stuff introduced in that territory. I know in my own experience at home that in the case of the machine agent, the farm agent, the blacksmith agent, and the general store agent, the life of his agency amounts to two or three years, and why? For the simple reason that he takes on this line of goods more in the manner of a side issue. He is led by the traveling man to believe that there is some easy money in the implement business, and he takes it on, and when he fails he sells out and quits. That leaves the farmer in that territory left with that machine, and when the time comes for readjustment, he is absolutely left, there is nobody to care for him. Now, the other kind of agency is that of the legitimate retail dealer, and I want to say we talk about a man who is established in business, who has a place of doing business, who anticipates the farmers' wants, keeps a full line of machines, keeps the help to give to the farmer the proper service when he needs, and who can be found in his place of business to wait on you when you come there to be waited on. From our dealers' standpoint we believe that it is to the interest of the farmer to treat his implement dealer exactly the same as he would treat his banker, go there for his business, and if the farmers will all deal with these implement dealers it will allow them to keep a larger stock, and be better prepared to furnish repairs for the farmers. I have known plenty of farmers who have had machines that are out in the field, cast aside because they could not get repairs for them, the farm agent was out of business and he could not get them. But if they had gone to a legitimate dealer and bought that machine, he could go back to the dealer and if he only had one machine the chances are nine out of ten that he will rob the machine he has in order to give you service rather than have you suffer.

I want to say that I think at home—some one might say that I am blowing my own horn, but I don't see but one farmer from our community—that is my honest conviction, that the distribution of farm implements should be through a legitimate and a real dealer, a man in a position to give you service, and always have the repairs on hand.

I was talking to a man the other day and he told me of a hundred tractors listed on the market in 1916, and that only twenty-five of those tractors at this time were listed on the market. That means that 75% are thrown out, and that means that the farmers who bought one of those tractors for a little less money are stung.

MR. CRAIN: Yes, I got one like that.

MR. POGUE: If it needs repairs he is stuck. Whatever you do—I am in the tractor game—don't stop back on a few dollars. When you buy a tractor, don't hesitate on the matter of the power. The most important thing is to get your power, when you buy a tractor find out what is back of it, find out if there is money back of it to push it. If they are reliable, stand well in financial circles, and then buy from a local dealer, don't buy from an automobile man without he has been an implement man—it is a matter of service. The automobile man don't know what service means compared to the implement dealer. When you buy a tractor buy it from your local man. When you buy machinery, buy from your local man. One will work about as well as the other, but it is good policy to buy the machine mostly used in your territory; by that means you can help your local dealer to build up his business, and your neighbor will lend you castings, etc. I happen to be president of the Eastern I. and V. D. Association, and that is the reason why I know that to succeed we must render to the farmers service, and keep the repairs on hand.

Now, in order to do all this, a man can't do it without he does business for a profit. You will find out the blacksmith agent don't realize what it will cost to do business. He buys a machine for $100 and sells it for $110, and thinks he has made $10. That class of man can't last long. Whenever you find a man who don't know what it costs to do business, it is only a matter of a short time before he will be out of business. I have been in the implement business for thirty years. I can recall right today fifteen men who have been in the implement business in that time who are not in the business today. The only resason was that they undersold me, undersold me to their own disadvantage, and it was only a

matter of time when those men failed. Some of them died, some of them only paid twenty-five cents on the dollar, others just broke even. Whenever you buy anything from a man who conducts his business along business principles, that man is there to stay. The other man may charge you a little bit less, but he will not give you the service later on. That is what I want to impress upon you farmers. You will buy just because you can buy a little bit cheaper from this agent and that agent, but you won't get the service that a regular implement dealer can give you. I think we are all too apt to send off to buy stuff away from home. That is a false idea, simply because you buy it a little bit cheaper. Build up your implement man's business. Don't send off to some catalog house. You send all your money there. If you buy from a local man the chances are you will get some of your money back, but if you buy from a catalog house the money all goes out of your territory. If you send to Chicago for your implements you don't get any money back.

Now, just at this particular time no man can tell the price of farm implements for 1919. We know only one thing, that wheat will be $2.20, but I don't see from any reasonable standpoint why farm implements should be a bit cheaper. In the first place there were not enough implements last year to go around. Manufacturers were sold out, and the local men were all sold out, and when the Government made the allotment for the raw material to the manufacturers for 1919, they cut down the allotment 25 per cent., only 75 per cent. to be manufactured, and for an extra supply. I don't see how implements can be cheaper, for the implements that you will buy in 1919 are manufactured, or were in the process of manufacture before the war stopped, at the high price of materials and high-priced labor. There is no reason in the world why they are going to be sold cheaper. There are two customers for one article. Lots of farmers would not buy simply because the price was advancing. Those farmers will have to buy at this time and there will be an extraordinary demand. My advice to every farmer who wants a piece of machinery is to buy it as soon as he can and get it home, for there is no likelihood for the price to be any cheaper for

two or three years. I read a speech made by Floyd Todd, of the John Deere Plow Company, in which he was comparing the prices of iron and steel with the prices of wheat, etc.—just before the beginning of the Civil War and three years afterwards, but there is no way of telling the future price by the past. I want to give you just a few figures that he cites, which I think will give you some idea of what you can expect. The price of foundry pig iron, F. O. B., Philadelphia, in 1861 was $20.25; this gradually increased until 1865 when it reached $46.12. In 1864 it had been $44.12, and by 1868 it was $39.25, three years after peace was declared it was double the price before the war started. Wheat in 1861 was $1.38, F. O. B., New York; in 1865 it was $2.45 a bushel, and in 1866 was $2.05 a bushel. That won't happen to you. In 1867 it was $2.60, and in 1868 was $2.40. Three years after the war was over it was higher than when the war started. Taking all those things in consideration, it don't look to me like any commodity will be cheaper for some time. While labor perhaps is going to be easier to get than it has been, after they begin releasing the boys from the camps and from the manufacturing plants, my belief is that the legitimate business will take up these men as fast as they come out. And as far as the farmer is concerned, he will be the last man who will receive any benefit from labor. The high wages and short hours paid elsewhere will prevent them from going back to the farm.

Now, gentlemen, you have heard my opinion on the subject. I want to thank Mr. Wirt in behalf of the implement dealers for an opportunity to present our claim in the little way that I can do it.

PRESIDENT HARRISON: Mr. F. A. Wirt will now open a discussion on "Experiences of Maryland Tractor Owners."

EXPERIENCES OF MARYLAND TRACTOR OWNERS.

By F. A. WIRT, Maryland State College of Agriculture.

The figures that I will give you are from 208 reports that we have gotten the past six months. We have some more at the office but these will serve the purpose.

Of the 208 farmers who owned tractors 79% report success; 16.7% a little less than 17% say the tractor is a failure, and a little more than 4% are neutral because many of the tractors were purchased in 1918, and consequently they do not care to give an opinion as to the success or failure of their machines.

Now it will be very interesting and illuminating at the same time to know when these tractors were purchased. Of these 208 tractors only one tractor was purchased in 1913, and it was a failure. In 1914, six were successful, and one failure; in 1915, six successful, and two failures. In 1917, thirty-nine were successful, and 13 failures and 2 neutral. In 1918, 90 successes, 10 failures, and 6 neutral. In 1915, 75% of the tractors were successful, if we believe the owners; in 1917, still 75%, and in 1918, it runs up to 90%. The reason for that may be due to better tractors, also more knowledge of the tractor, and possibly they have not had the tractor long enough to tell. They have had the tractor this year, and consequently they say it was successful.

Taking up the size of tractor and the success with 8-16 tractor, most of them purchased recently, 80% successful; 10-20 85%; 12-25 90%. In other words, as the size of the tractor increases the chances for success also increase according to the reports from these 208 men. I think it is due to the very difficult conditions under which the tractors are used in this State. The 8-16 is likely to be overloaded many times easily, accounting for the figures as we have them here. Possibly the fact that the 12-25 is more adaptable to many places than the smaller tractor is a factor. I will take that up later.

Now, as for fuel—104 of the successes use kerosene, 32 use gasoline, and 6 use a mixture, usually about 20% gasoline and 80% kerosene, a common mixture in this State. Of the failures, 28 use kerosene—the use of kerosene apparently has had no effect on whether the tractor is successful or not.

Now for the acres of these farms reporting. The successes have 203 acres under cultivation; the failures 207. Of the 203 acres, 189 were adapted to tractor use; the same is true of the failures—189 in each case. The type of soil apparent-

ly has no effect on the success or failure of the tractor, judging from these reports. 35 report clay loam; 29 clay, while 14 of the successes report medium rocky fields. Of the failures, the majority of them 13 are in loam soils, and 6 medium rocky. The topography for the level, rolling or hilly apparently has no effect, judging from the reports that we have. 24 of the failures are on level fields, 6 on level and rolling. The uses of the tractor has a great deal to do with the success of the tractor, and I think that is one of the big factors to be considered.

Now, how many uses? I want to read briefly the uses of the tractor. 148 report plowing, 74 report discing, 94 report harrowing. Many of these put discing as a separate item, but others include it. 36 pulled the grain binder, 24 did hauling, 14 pulled stumps, 12 pulled hay loads, 13 spread manure, 10 graded roads, 4 pulled grain drills, 3 pulled corn planters, 3 pulled mowers, 3 dug trenches to drain the fields, 2 moved buildings, 2 pulled rocks, 2 pulled lime sowers, 2 cultivated, 2 planted corn, 1 dug potatoes, and 1 hauled the sprayer in the orchard. In all 20 separate uses are mentioned. Taking up belt work, we find that 46 sawed wood, 41 filled the silo, 37 threshed, 31 ground feed, 17 husked and shocked, 13 shelled corn, 8 baled hay, 2 pulled the cider mill, 1 hauled hay, and I think one or two helped in the canning factories. There are ten uses on the belt work. 30 uses altogether.

Compare that 30 with the report of the men stating the tractor is a failure; on the draw bar only eight uses are given, and on the general work, eight—16 uses to which the unsuccessful man puts the tractor. The successful man uses it in 30 different ways.

The question of saving man and horse labor is interesting. Of the successful men 25 state that the tractor does not save man-power, 15 state that it does; 36 men report that it saves one man; 55 that it saves two men; 12 that it saves three men; five that it saves four; two that it saves five; and one that it saves 11—undoubtedly he is referring to plowing, where they are using one-man small plows and a mule.

Now the saving of horse labor is very important. Of the successful men 12 state that it does not save horse labor; 15 state that it does; one man saves one horse; 18 saves two; 15 save three; 34 save four; four save five; 26 save six; six save eight; 10 save nine; two save 10; four save 12; one saves 14, and one saves 15 horses—this is also in plowing I suppose. One hundred and twenty-six of the successful men state that they save man-power, and 25 do not; on horse-power 137 of the successful men can save horse-power and 12 do not.

We will now look at the reports of the failures and see what they have to say about it, and perhaps that will throw a little light on the subject. Twenty-six of the failures say they cannot save man-power by using tractor; one answers yes, and does not go into detail; five save one man; four save two men; and four save three men. Altogether 14 who can save man-power, yet the tractor is a failure. While 26 say they cannot save horse-power, 21 state that they can, and still the tractor is a failure, while 19 state that they cannot.

Now, which is the more satisfactory—the horse or the tractor? For such work as the tractor is adapted to, 134 of the successful men state that the tractor is more satisfactory, only four in favor of the horse, and only four are neutral Of the failures 50 per cent. of them state that the tractor is more satisfactory than the horse.

Which is cheaper to operate, the horse or the tractor? Of the successes 138 say the tractor is cheaper, only six in favor of the horse. Of the failures, it is fifty-fifty.

How many days a year can you use your tractor? Of the successful, 90.4 days; of the failures only 58 days. This you will notice fits in with the uses to which the tractor is put to —the successful man has more uses. As Major Chase says, he plans his work, he builds his farming operations around the tractor.

Is your repair bill high? Of the successful men 129 states that the repair bill is not high, only nine state that the bill is high, while four men say it is reasonable. Of the failures, as many as 17 state that the repair bill is low, while 12 state that it is high.

Now, for the yearly cost of repairs. The successful men report $42.50 a year; the failures, 97.80. In other words, men reporting failures have twice the repair bill that the successful men have.

How much fuel and lubricating oil is used per day? The successful men use 18.1 gallons; the failures nearly the same; only .12 gallon more. For oil the successful men use 1.39 gallons per day and the failures use 1.46. The hours worked per day on an average is 10. The acreage plowed per hour averages from about .4 to over 1. The average is .75, ¾ of an acre; the failures slightly below that.

The fuel per acre—successful men use 2.36 gallons; the failures 2.42 gallons. Oil per acre in gallons—.18 for the successful, and .19 for the failures.

Those of you that are interested in buying tractors will be intensely interested in this: How large must the farm be before the tractor is profitable? The successful men say from 40 to 250 acres—the average is 103; for failues the lowest given was 100, and the highest 300, with an average of 158.

This information will be published some time this winter.

PRESIDENT HARRISON: The meeting stands adjourned.

REPORT

OF THE

MARYLAND STATE HORTICULTURAL SOCIETY

TWENTY-FIRST ANNUAL MEETING

Held at the Emerson Hotel, Baltimore, Md.

December Tenth and Eleventh

1918

TUESDAY, DECEMBER 10th, 10 A. M.

TWENTY-FIRST ANNUAL MEETING.

MARYLAND STATE HORTICULTURAL SOCIETY.

PRESIDENT WM. J. JOHNSTON, presiding.

THEME: State and National Problems in Horticulture in Cooperation with Southern Commercial Congress.

President Johnston called the meeting to order at ten o'clock. Dr. T. B. Symons reported as follows:

REPORT OF SECRETARY-TREASURER HORTICULTURAL SOCIETY.

By T. B. SYMONS, College Park.

Mr. President and Members of the Society:

We are assembled for the twenty-second annual meeting of this association at the most momentous period in the history of our country and the world. We rejoice together for the victory achieved and we shall commune together on plans for the reconstruction period. The farmer and fruit grower have responded to the call of the Nation in a most generous and patriotic manner under most trying circumstances. We shall continue to answer the call of the half-starved people of Europe. The seriousness of our food situation, my friends, will continue to be acute. The situation which is confronting the unfortunate people of the Russian empire this winter is deplorable. The need of every farmer spending his greatest effort during 1919 is evident on all sides. The farmers have responded during the past year with unending glory to themselves and the great industry which they represent. They will do more in 1919. This meeting, I hope, will serve as a source of inspiration and assistance to all of us in solving some of our problems for 1919.

The society has pursued the same policy as last year in encouraging local community exhibits rather than by holding our Maryland Week Exhibition. A large number of these exhibits have been held in all parts of the State. The

epidemic of influenza served to prevent the holding of several local shows. Many were postponed and held at later dates. There is no doubt concerning the good work that these local competitions do for the community. We have thus continued our educational work at a minimum expense of time and labor on the part of growers. Necessity has caused us to do an even greater work by reaching a large number of farmers who never came to our Maryland Week Show. The policy that the society will pursue in the future will have to be determined.

At the earnest solicitation of the Southern Commercial Congress, we finally arranged to make a small State exhibit, representing our agricultural resources at the allied war exposition. The Congress, on their own accord, generously offered $500.00 in prizes for apples. We are grateful to many of the fruit growers who, under great difficulty, have entered this competition and thus aided in making a fine showing for our fruit industry. The State exhibit has been arranged by a committee of our Extensive Service, headed by Prof. Cory. We have also arranged our program for the week in cooperation with the Southern Commercial Congress and I feel sure our members will appreciate the opportunity to attend many of its sessions.

A very successful summer meeting of the Society was held at Mt. Pleasant Orchards, Havre de Grace, Md., the home of Mr. C. E. Bryan, on August 2nd. There was a very large attendance, between 500 and 700 members from all parts of the State. The Society is indebted to Mr. Bryan for furnishing an opportunity to observe a splendidly conducted peach and apple orchard of more than 15,000 trees. It is believed that the summer meetings serve an excellent purpose by giving our members an opportunity to get together during the growing period and to observe field conditions.

Our fruit growers, for the most part, have had a very successful season. True we have harvested only about a 50% apple crop and less than 50% of a peach crop, yet prices have been excellent. Fruit growers like other farmers have had difficulities in securing labor, nevertheless, we have gotten

by, to use slang, and I do not believe there has been any great waste in harvesting the crops.

Our florists have had the greatest difficulty during these war times, principally on account of the price and scarcity of coal, but they, we trust, will be able to come back and develop the industry in the State on a larger scale than ever before.

During this reconstruction period, we must exert every force of the great Horticultural Industry in this State. We must make this Society stronger. Every fruit grower should be a member and attend the annual meetings of the Society. In unity there is strength. There are many problems ahead of us to solve and no one now doubts the force of combined and intelligent direction of movements for the good of the Industry.

Now that the federation of all the affiliated associations into the Maryland Agricultural Society is completed and as Secretary of the Agricultural Society, I feel I should not permit my name to be considered for Secretary and Treasurer of this Society for another year. The Horticultural Society can thus have another respresentative upon the Agricultural Council. I have had the honor of being Secretary-Treasurer of this Society since 1906, with the exception of two years, 1908-1909. It has been one of the most enjoyable and pleasant relations of my humble career. I believe all will agree that during this period our Society, by the cooperation of all members and other agencies, has made remarkable progress and placed Horticulture in the front rank of the agricultural industries of this State.

I trust the Society understands that this action will in no way lessen my interest in the success of the work, but will permit another to become more active in promoting the success of the association.

As treasurer, I beg to submit that a balance of $25.16 exists in the treasury, September 30th, 1918, and request that an auditing committee be appointed to examine and report upon the accounts.

FINANCIAL STATEMENT OF TREASURER.

T. B. SYMONS,

In Account with the State Horticultural Society.

Chk.	Date. 1917.			
	10/1	To Overdraft	$131.75	
802	"	To Anna E. F. McCarthy, Aug. and Sept. Salary, Stenographer	10.00	
803	"	To the Foer Wall Paper Co., Mdse.	19.90	
804	15	To William F. Thomas—Expenses, New York Exposition	100.00	
	"	By Deposit		$1,250.00
	18	By Deposit		11.00
	20	By Deposit		19.00
805	"	To M. T. Bowdoin—4,000 Stamped envelopes	128.32	
	27	By Deposit		44.00
806	30	To Grahams' Storage Warehouse Co. —Oct. storage charges	5.00	
807	"	To Anna E. F. McCarthy—Oct. Salary, stenographer	5.00	
	11/2	By Deposit		17.00
808	9	To S. B. Shaw—Traveling expenses, New York Exposition	67.83	
809	"	To S. B. Shaw—Traveling expenses, Assistant Secretary	11.42	
810	14	To Corona Orchard Co.—Fruit for Exposition	24.04	
811	"	To the Washington Woodworking Co.—Exhibit for New York	42.00	
812	"	To W. B. Harris—Fruit for New New York Exposition	6.13	
813	"	To W. B. Moses & Sons—Mdse., New York Exposition	8.25	
814	"	To M. G. Copeland Co.—Mdse., New York Exposition	28.00	
815	"	To Thomas & Evans Ptg. Co.— Miscel. printing	24.03	
816	"	To A. L. Towson—Fruit for New York Exposition	11.25	
817	"	To Wells, Fargo & Co.—Expressage to New York	12.04	
818	"	To W. R. C. Connick—Premiums, Baden Community Exhibition	22.50	
819	"	To A. J. Smith—Premiums, Wolfsville Community Exhibition	25.00	
820	"	To John H. Briscoe—Premiums, Leonardtown Community Exh	100.00	
821	15	To Lawrence Gilardi—Fruit and expressage to New York	3.50	
822	"	To C. L. Smith—Expressage on fruit to New York	.97	
	16	By Deposit		18.00
	19	By Deposit		3.00
823	21	To Samuel L. Byrn—Premiums, Cambridge Community Exhibit	100.00	

824	21	To H. C. Fawley—Premiums, Jefferson Community Exhibit.....	25.00	
825	"	To W. Lee Allen—Premiums, Salisbury Community Exhibit.....	85.00	
826	"	To W. R. Ballard—Premiums, Hyattsville Community Exhibit.....	23.85	
827	22	To T. A. Gonder—Premiums, Oakland Community Exhibit.....	50.00	
828	"	To J. S. Hartman—Premiums, Cavetown Community Exhibit.....	50.00	
829	28	To Mrs. Samuel Beall—Premiums, Beltsville Community Exhibit...	23.00	
830	"	To Bergen T. Brown—Premiums, Freeland Community Exhibit....	10.00	
831	"	To Grace Sothoron—Two Premiums, Reisterstown Community Exhibit.	10.00	
832	29	To Ira Pike—Fruit for New York Exposition	14.80	
833	"	To C. Z. Kellar—Premiums, Crisfield Community Exhibit.....	43.00	
834	"	To C. Z. Kellar—Premiums, Princess Anne Community Exhibit...	57.00	
835	"	To Anna E. F. McCarthy—November salary, stenographer.....	5.00	
836	12/4	To Lucy J. Atwill—Premiums, Putty Hill School Exhibit.....	10.00	
837	"	To Lavinia Brown — Premiums, Brighton Grange	15.00	
838	"	To E. L. Camper—Premiums, Easton Community Exhibit.....	37.50	
	5	By Deposit		7.00
839	"	To Orlando Harrison—Premiums, Berlin Community Exhibit.....	52.72	
840	"	To Mrs. M. E. Hopkins—Premiums, Cordova Community Exhibit.....	37.50	
841	"	To Mrs. O. K. Walls—Premiums, Girls' Clubs, Talbot County.....	12.50	
842	"	To E. P. Walls—Premiums, Boys' Clubs, Talbot County.....	12.50	
843	"	To L. H. Powell—Premiums, Allegany County	74.80	
844	"	To W. S. Powell—Premiums, Ellicott City Community Exhibit....	100.00	
845	"	To M. T. Bowdoin—Postage.....	19.00	
846	12/7	To E. O. Anderson—Premiums, Boys' Clubs, etc.....	100.00	
847	"	To Grahams' Storage Warehouse Co. —November storage charges....	5.00	
848	"	To A. H. Johnson—Premiums, Centerville Community Exhibit.....	100.00	
849	12/8	To M. F. Holter—Premiums, Middletown Community Exhibit.....	25.00	
850	"	To M. G. Ruff—Premiums, Randallstown Community Exhibit.....	10.00	
851	11	To M. T. Bowdoin—Postage.....	5.00	
852	"	To B. L. Obery—Premiums, Annapolis Community Exhibit.....	28.75	
853	"	To J. M. Cromwell—Premiums, Ijamsville Community Exhibit....	25.00	

854	11	To Agnes C. Blandford—Premiums, Surrattsville Community Exhibit.	25.00	
855	"	To W. Lee Allen—Premiums, Boys' Clubs, Wicomico County.....	15.00	
856	12	To Edgar R. Pennington — Premiums, Betterton Community Exh.	100.00	
857	"	To John L. Case—Premiums, Burtonsville Community Exhibit....	28.50	
858	21	To Anna E. F. McCarthy—Travel and stenography, labor.....	10.65	
859	"	To Lamb & Tilden—Rubber stamp..	.81	
860	"	To Thomas & Evans Printing Co.—"Maryland Week" Posters.....	16.60	
861	"	To J. Kellar Smith—Premiums, Union Bridge Community Exhibit.	19.50	
862	"	To The Kny-Scheerer Co.—Mdse., New York Exposition.....	15.50	
863	"	To Hotel Rennert—Expenses, Board Meeting	5.85	
864	"	To A. Hoen & Co.—Printing prog.	73.98	
865	"	To A. B. Twining—Expressage on corn to New York Exposition....	1.42	
866	"	To C. C. Smth & Son—Fruit for New York Exposition.....	24.80	
867	"	To A. G. Middleton—Premiums, Oakland Community Exhibit....	50.00	
868	"	To Anna E. F. McCarthy—December salary, stenographer.....	5.00	
	22	By Deposit		36.93
869	"	To R. L. Watts—Traveling expenses, speaker "Maryland Week".....	48.25	
870	"	To B. L. Obery—Premiums, Girls' Clubs and Women's.....	50.00	
871	"	To Henry Dubbs—Premiums, Baltimore City Exhibit.....	10.00	
872	27	To C. L. Plummer — Premiums, Frederick Community Exhibit....	100.00	
873	"	To Grahams' Storage Warehouse Co.—December storage charges...	5.00	
874	"	To Hester Wilhelm — Premiums, Foreston Community Exhibit....	49.00	
874a	28	To R. B. Thomas—Expenses, Board Meeting	9.32	
	29	By Deposit		18.27
	1918.			
875	1/7	To Eline Calcium Light Co.—Stereopticon, Maryland Week.....	15.00	
876	"	To Hotel Emerson — Expenses, staff, Dec. 18-20.....	86.65	
	"	By Deposit		3,750.00
877	14	To F. R. Young—Premiums, Mt. Airy Community Exhibit.....	21.25	
878	"	To E. R. Speake—Premiums, Nanjemoy Grange	25.00	
879	"	To Viola Poole — Premiums, La Plata Community Exhibit.....	74.00	
880	"	To J. Sussman Photo. Stock Co.—Photos.	41.50	

881	15	To T. B. Symons—Traveling expenses, January and December...	27.77	
882	17	To O. B. Burrell—Fruit for New York Show	21.54	
883	"	To Henry Shriver—Premiums, Boys' Clubs	25.00	
884	"	To Daniel G. Rowe — Premiums, Ringgold Community Exhibit....	50.00	
885	"	To J. J. Hooper—Expenses, speaker, "Maryland Week"	49.32	
886	"	To E. S. Savage—Expenses, speaker, "Maryland Week"	46.12	
887	19	To W. B. Kemp—Premiums, Sparks Community Exhibit	10.00	
888	"	To Bertha Bland—Premiums, Yeoho School Exhibit	10.00	
889	30	To J. Henry Herr — Signs for "Maryland Week"	61.68	
890	31	To Anna E. F. McCarthy—January salary, stenographer	5.00	
	2/4	By Deposit		5.00
891	"	To M. A. Blake—Expenses, speaker, "Maryland Week"	40.50	
892	"	To Advertiser-Republican—Printing letter-heads	10.00	
893	"	To Grahams' Storage Warehouse Co.—January storage charges.....	5.00	
894	19	To Seed Distribution Fund—Contribution—Society	75.00	
895	20	To A. C. Shepherd — Reporting "Maryland Week" meetings.....	187.41	
896	"	To Dyer Bros.—Exhibit case.....	10.70	
897	23	To S. B. Shaw—Traveling expenses, Assistant Secretary	1.30	
898	26	To Grahams' Storage Warehouse Co. —February storage charges.....	5.00	
899	28	To Anna E. F. McCarthy—February salary, stenographer.....	5.00	
900	3/5	To Fidelity & Deposit Co. — Premium, Secretary's Bond.....	25.00	
	8	By Deposit		20.00
	22	By Deposit		3.00
901	30	To Anna E. F. McCarthy—March salary, stenographer	5.00	
902	4/10	To Grahams' Storage Warehouse Co. —January-March storage charges.	10.00	
903	20	To A. Hoen & Co.—Printing letter-heads	16.76	
904	"	To D. G. Harry—Traveling expenses, Council meeting..... .	47.03	
905	25	To R. L. Hickerson—Premiums, Germantown Community Exhibit....	56.50	
906	26	To Grahams' Storage Warehouse Co. —April storage charges.....	5.00	
	30	By Deposit		3.00
907	5/1	To T. B. Symons—Salary, Secretary-Treasurer	75.00	
908	"	To Anna E. F. McCarthy—April salary, stenographer	5.00	

	13	By Deposit		96.75
909	25	To Ruth McRobie—Stenog. labor...	8.00	
910	"	To Florence Daniels—Stenog. labor.	4.75	
911	"	To Irene Snyder—Stenog. labor...	8.75	
912	"	To Grahams' Storage Warehouse Co. —May storage charges.....	5.00	
913	27	To Emerson Hotel—Board meeting, expenses	34.00	
914	31	To Anna E. F. McCarthy—May salary, stenographer	5.00	
	6/17	By Deposit		65.85
915	25	To Grahams' Storage Warehouse Co. —June storage charges.....	5.00	
916	7/6	To Anna E. F. McCarthy—June salary, stenographer	5.00	
917	17	To Emerson Hotel—Expenses, committee meeting	21.25	
918	22	To T. B. Symons—Secretary's salary	75.00	
919	"	To M. T. Bowdoin—Postage, program, summer meeting.....	20.00	
920	25	To M. T. Bowdoin—Postage, program, summer meeting.....	15.00	
921	8/1	To E. Morrison Paper Co.—Stationery and supplies.....	26.64	
922	"	To Meyer & Thalheimer—Printing program, summer meeting.....	69.75	
923	"	To Grahams' Storage Warehouse Co. —July storage charges.....	5.00	
924	"	To Advertiser-Republican—Printing letter-heads	10.00	
925	"	To Anna E. F. McCarthy—July salary, stenographer	5.00	
926	8/29	To Thomas & Evans Printing Co.— Printing Annual Report.....	1,090.51	
927	"	To Grahams' Storage Warehouse Co. —August storage charges.....	5.00	
928	"	To Anna E. F. McCarthy—August salary, stenographer	5.00	
929	9/5	To M. T. Bowdoin—Postage.....	20.00	
930	24	To M. Ruth Guyton — Premiums, Long Green Grange.....	10.00	
931	30	To Anna E. F. McCarthy—September salary, stenographer.....	5.00	
932	"	To Thomas & Evans Jrinting Co.— Printing envelopes and postage..	105.93	
		Check No. 801 cancelled in 1918 a/c; outstanding in 1917 a/c.....	10.00	
		Check No. 893 outstanding current a/c....		5.00
			$5,347.64	$5,372.80
		By Balance	25.16	
			$5,372.80	$5,372.80

PRESIDENT JOHNSTON: You have heard the report of the Secretary-Treasurer.

It was moved and seconded that the report be adopted, and

an Auditing Committee was thereupon authorized to be appointed later.

President Johnston then read his address as follows:

Another year has passed, since the last meeting of the Horticultural Society, and a kind Providence has permitted us again to assemble for the discussion of questions vital to the Horticulturalist and the Floriculturist.

The great world war which has been raging for the past several months has taken many of our men from the fields and greenhouses and has brought us face to face with a number of important problems. The greatest of these is labor, which it is almost impossible to purchase even at the high prices that have prevailed during the war period.

Our Government has called upon the Farmer to produce the food for our men in arms. In spite of all the difficulties they have had to overcome they have responded nobly, and by the help of an all wise Providence they have, as we now say, "Gone over the top," and helped to feed our Allies as well.

The Florist's business with which I am more closely allied, while being classed as nonessential, has had many difficulties to overcome. Next to the labor question, the securing of coal, was our greatest problem. Last spring we were told by the Fuel Administrator that only one-half or 50% of the usual amount of coal used during each of the three preceding years could be had, which meant to us the cutting out of one-half of the space for growing flowers. Since then the coal situation has looked brighter but too late for a great many to re-stock with plants to their full capacity.

Another difficulty that we had to contend with was the question of importation of plants and bulbs. It is almost impossible to get Azaleas which are depended on so largely for winter and spring trade. Some of the commercial growers have closed their houses and have gone into other business until the war is over.

The solution of the problems which we have all had to face during the past two years is to be found, I believe, in the return of our boys from over there to their respective positions which they left. There are going to be many changes in the

personnel of our men with whom we have been so closely associated in the past. A great many of our boys have given their lives for their country, and new associations will have to be formed to carry on our business interests in the future.

In facing this readjustment period, we should see to it that the horticultural interests of the State are properly safeguarded. We have made wonderful progress in all phases of horticulture, and during the coming period, this industry should be extended.

I am deeply interested in the Return Soldier Movement. I believe that the Government should make it as easy as possible for those Soldiers who desire to engage in Agricultural or Horticultural pursuits. I believe that we should oppose a national policy which will direct all such men to unsettled, undeveloped sections of our country. Soldiers from each State should be allowed to return, and engage in business in their home State and among their friends and relatives. There is much land now improved that is not being farmed to advantage on account of lack of man power. It is well to consider the development of our natural resources, swamp lands, arid lands and cut over lands, but we should till our available farming land to the limit before opening up new areas far from markets, schools, churches, roads and other improvements that make life worth living in the country.

I am glad to see that our program provides a united conference on farm labor-saving machinery. This is a subject that is of vital interest to all members of this Society, as well as to general farmers.

Few of us realize the great progress that is being made in motor-truck marketing. The pressure on the railroads has greatly hastened the development of motor-truck transportation. This means that transportation will be of immeasurable advantage to farmers in many sections of our State, particularly, those within reasonable distance of the cities. This is one of the developments resulting from good roads, for which our State is noted far and wide. We should lend our encouragement to the further development of motor-truck transportation, as it will greatly aid in the distribution and marketing of our products.

The armistice has been signed and hostilities have ended in this great World War. God grant that peace will soon come to all nations, and that every man whose life has been spared will soon return to his home and family, and let us cherish in our memories the thought of those who made the supreme sacrifice to make our country a safe place in which to live.

The Horticultural Society has been handicapped by war conditions in that the Maryland Week Exhibition had to be postponed for the last two years but I am in hopes that it will be held the coming year.

The Society had its Summer Meetings this year at Havre de Grace at the home of Mr. Bryan. Although I was not able to be present I am told it was one of the most enjoyable ever held.

Before closing I want to thank the Members of the Horticultural Society, for the high honor of being your President for the past year, and to thank your Secretary and Treasurer for the assistance he has given me, and the work he is doing to further the interests of the Society.

PRESIDENT JOHNSTON: The next on the program is "Orchard Fertilizer Demonstrations," by Mr. S. B. Shaw, Extension Horticulturist.

ORCHARD FERTILIZER DEMONSTRATIONS.

By S. B. SHAW, Extension Horticulturist.

By way of explanation let me say that the brief discussion which will be made of this subject has particular reference to the growing of apples and not to peaches nor other fruits. In some of the orchards in which this work has been started peaches occur as fillers, but the observations will be made primarily with apples.

There is no one factor of orchard management about which less definite information can be given than that of fertilization. A number of carefully conducted experiments along this line have been made and are still being made, but as yet the results are very contradictory. This could well be expected for the relation of plant growth to soil environment

No. 4.—Community Exhibit held in Court House, Somerset County, 1918.

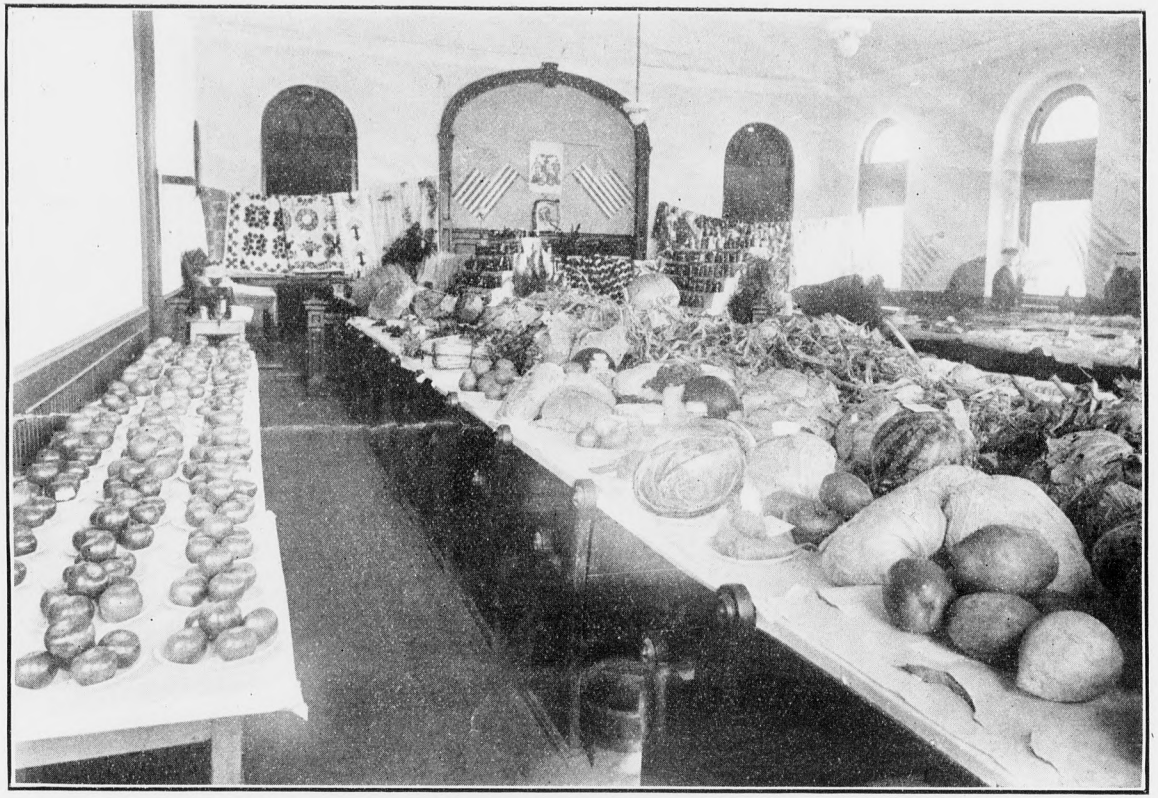
in different localities makes a basis of comparison almost impossible.

Of the numerous recommendations which have been made regarding orchard fertilization, Voorhees, states that "the necessity for the application of fertilizers in the growing of apples * * * is due largely to the fact that it is really a continuous cropping of the same kind and therefore more exhaustive than a cropping which removes more plant food in the same period of time. While upon good soils the trees may be able to acquire sufficient food to mature maximum crops for a considerable period, the life of the trees as well as the character of the fruitage will be very favorably influenced by the fertilization." The same writer quotes the results of the Cornell Experiment Station (Bulletin No. 103) in showing the comparison between the amount of plant food contained in 20 crops of apples and 20 years continuous cropping with wheat. "By this comparison it is shown that the 20 crops of apples remove more than twice as much nitrogen and half as much again of phosphoric acid, and nearly three times as much potash as the 20 crops of wheat. The results are valuable in indicating the rate of soil exhaustion by apple growing. It is to be remembered, however, that the larger root development of the tree would enable it to draw its nourishment from a larger area of soil than is the case with wheat, and thus probably permit of normal growth for a longer period."

The results shown by the Geneva Experiment Station, (Bulletin No. 289) seem to differ somewhat from the conclusions reached by the experiment at the Cornell Station, in that "this experiment shows that 57 years of orchard cropping has not reduced the soil of the station orchard to the condition where it needs a complete fertilizer. The fact that plowing under leguminous crops give beneficial effects in the orchard shows that the soil is having a one-sided wear, It needs nitrogen and humus rather than potash and phosphoric acid."

According to L. H. Bailey, "these results are practically confirmed in a 5 year experiment by the New Hampshire Station." Gourley reports that "up to the present time 1913,

No. 4.—Community Exhibit held in Court House, Somerset County, 1918.



No. 4.—Community Exhibit held in Court House, Somerset County, 1918.

in different localities makes a basis of comparison almost impossible.

Of the numerous recommendations which have been made regarding orchard fertilization, Voorhees, states that "the necessity for the application of fertilizers in the growing of apples * * * is due largely to the fact that it is really a continuous cropping of the same kind and therefore more exhaustive than a cropping which removes more plant food in the same period of time. While upon good soils the trees may be able to acquire sufficient food to mature maximum crops for a considerable period, the life of the trees as well as the character of the fruitage will be very favorably influenced by the fertilization." The same writer quotes the results of the Cornell Experiment Station (Bulletin No. 103) in showing the comparison between the amount of plant food contained in 20 crops of apples and 20 years continuous cropping with wheat. "By this comparison it is shown that the 20 crops of apples remove more than twice as much nitrogen and half as much again of phosphoric acid, and nearly three times as much potash as the 20 crops of wheat. The results are valuable in indicating the rate of soil exhaustion by apple growing. It is to be remembered, however, that the larger root development of the tree would enable it to draw its nourishment from a larger area of soil than is the case with wheat, and thus probably permit of normal growth for a longer period."

The results shown by the Geneva Experiment Station, (Bulletin No. 289) seem to differ somewhat from the conclusions reached by the experiment at the Cornell Station, in that "this experiment shows that 57 years of orchard cropping has not reduced the soil of the station orchard to the condition where it needs a complete fertilizer. The fact that plowing under leguminous crops give beneficial effects in the orchard shows that the soil is having a one-sided wear, It needs nitrogen and humus rather than potash and phosphoric acid."

According to L. H. Bailey, "these results are practically confirmed in a 5 year experiment by the New Hampshire Station." Gourley reports that "up to the present time 1913,

No. 4.—Community Exhibit held in Court House, Somerset County, 1918.

we have not received any cash returns for the fertilizer that has been used in this orchard.'' The size of fruit has been increased by the use of fertilizers, especially by the use of excess of nitrogen and potash as shown by the percentage of number one apples.''

''On the other hand opposite results have been secured by the Massachusetts and Pennsylvania Stations. The Massachusetts test had been conducted for 20 years or more when it was reported that 'the experiment shows most decisively that apple trees must be fed to grow well and bear well.' ''

Some of the conclusions up to 1913 as given by the Pennsylvania Experiment Station, (Bulletin No. 121) indicate ''the experiments of this station have shown that the fertility needs of an orchard may be the most important check upon its production. Variations in the fertilization alone have resulted in average differences ranging from 50 to 460 bushels an acre annually for the past 4 or 5 years depending upon the experiment * * * the influence of proper fertilization is not transient. The gains from it have been greater in the 6th or last year in some of our experiments than at any time before. In one case these gains have exceeded 1,100 bushels an acre.''

''In all our experiments the action of manure has proved to be practically identical with that of a commercial fertilizer, rich in nitrogen and phosphorous. Their successes and failures have coincided with two exceptions, and in those cases moisture rather than plant food was apparently the controlling factor. The commercial nitrates and blood have acted more quickly than the manure, and the potash in the latter has been apparently less effective than that in the commercial form.''

From the above there seems to be a considerable difference of opinion in regard to the use of fertilizers of various kinds. Apparently the only solution to this problem, which confronts each individual grower, is for him to make use of the kind of fertilizing material best suited to his particular needs.

Soil conditions throughout Maryland vary considerably and it would be hard to make specific recommendations for any particular locality. It is generally believed, however,

LIBRARY, UNIVERSITY OF MARYLAND

that most of our soils contain considerable potash and possibly phosphate, but there is every reason to believe that there is a deficiency of nitrogen.

The common practice with most orchard men has been to stimulate the growth of trees as rapidly as possible. In order to bring about this result, they have practiced a system of cultivation which embraced tillage and the growing of soil improving crops fortified with nitrogenous fertilizers. Usually the growth of trees has been all that could be desired, but in some instances the grower has been confronted with the difficulty of controlling blight which seems to attack most readily this quickly grown wood. As a result, some of our growers have felt it advisable to check the growth of their trees, and in so doing have stopped intensive tillage.

Assuming that our soils contain an abundance of potash and phosphates, we could reasonably expect that the addition of vegetable matter or humus, to these soils, and their constant stirring by means of cultivation would have a tendency to render available such potash and phosphate as is naturally present. Where cultivation of this kind has been stopped, it might also be expected that this supply of available potash and phosphate would be more or less reduced.

Investigations made in the production of farm crops indicate that phosphoric acid enters largely into the development of seed. As wheat and corn have been most extensively grown in this section ever since the country first was settled, we might be led to believe that there is the possibility of a deficiency of available phosphoric acid in some of our soils due to the fact of these crops having been sold from the farms. The nitrogen and potash which went into the leaf and stem growth of plants has been retained on the farms and returned to the land.

Having in mind the idea that the production of corn and wheat has been increased by the application of phosphoric acid, it has been thought that perhaps some beneficial results might follow a similar practice in the growing of orchard crops. With this end in view a series of orchard fertilizer demonstrations has been outlined for the purpose of demonstrating the possible effect of phosphoric acid in the production and development of bloom and subsequent fruit.

LIBRARY, UNIVERSITY OF MARYLAND

That this work may be as comprehensive as possible, orchards have been selected wherever practicable on the different soil types of the state and under a wide range of climatic conditions. Demonstrations have been outlined in the following counties: Worcester, Dorchester, Talbot, Cecil, Harford, Carroll, Montgomery, Washington, Howard, Baltimore and Allegany.

In order to arrive at some definite conclusions, the same unit of fertilizing material has been adopted for each demonstration namely, 16% acid phosphate. This material is being applied in the same amounts and as nearly as possible at the same time on each of the demonstrations. It is hoped that by this method, we will be able to observe in a comprehensive way the effect of this particular element of plant food over the state as a whole.

The application of this fertilizer does not in any way interfere with the systems of cultivation practiced, or with the growing of inter-crops. Such crops are to be fertilized independently of that applied for the fruit trees. In some of the orchards, the demonstration is put on where cover crops are being grown as compared with permanent sod. In other instances comparison is being made of cultivation and non-cultivation, and between inter-planting of truck crops and of legumes. Wherever possible we have endeavored to carry on this demonstration with the same variety of fruit, namely Stayman, and it is hoped that by the end of three years we may be able to demonstrate whether or not phosphoric acid can be used to advantage by any of our growers in the production of apples.

A MEMBER: We have been told repeatedly that most soils are quite rich in potash. If that is so, it is not necessary to apply potash. We are also told that phosphoric acid is not found in our soils and that it should be applied. Is this necessary?

MR. SHAW: The general impression is that most soils contain a variable amount of potash and phosphates. These are not always available for the immediate use of plants. When vegetable matter is added to the soil and decomposition takes place, a chemical action results which renders these elements available as plant food.

MR. C. R. HARTSHORNE: Approximately how much phosphoric acid is removed by a thirty bushel crop of wheat? Is there anything like as much taken out as usually is put in when fertilizing the crop

DR. MCDONNELL: Two hundred pounds of acid phosphate will more than furnish the amount.

MR. MILLER: I am from West Virginia. I want to ask Mr. Shaw about getting nitrogen into our soil through the use of phosphoric acid on legumes. We used phosphoric acid on cowpeas and crimson clover. What is your experience in working nitrogen into the soil through these legumes, and to what extent does the phosphoric acid stimulate their growth and development?

MR. SHAW: The general opinion is that the use of acid phosphate promotes the growth of legumes. Plants, like animals, seem to do best on a balanced feed. Phosphoric acid is apparently needed to properly balance the plant food requirements of most legumes.

MR. MILLER: Last year I was turning phosphate rock in the ground around my trees, and my brother asked, "Why don't you work this phosphoric acid in with cowpeas? You will get phosphoric acid and nitrogen both." I guess he knew more than I did.

PROF. TALIFERRO: I can quote from a bulletin that has been issued by the Maryland State College, in which the writer states that the application of acid phosphate with the sowing of cowpeas at the last cultivation, gave a better fertilizer balance and better fruit than making one application of acid phosphate in the spring. That is really the recommemdation of all, I think, either in orchard work or in ordinary farm operations. We can see the same principle illustrated in the use of acid phosphate or floats in combination with stable manure, rather than the use of phosphate by itself and the manure by itself.

MR. KILE: I would like to ask Mr. Shaw, if, in any of these demonstrations that are being carried on, any further combinations are contemplated,—for instance, including ammonia or nitrogen In Ohio, Pennsylvania and West Virginia, I believe they found rather marked results with ammonia.

MR. SHAW: We hope to start some work with nitrogen in its different forms when conditions become more nearly normal. During the past year or eighteen months, it has been difficult for our growers to obtain nitrogen in any commercial form. We started with phosphoric acid because it was the one form of commercial plant food that practically all of our growers could obtain within reason. Later we hope to carry on similar work with nitrogen and possibly potash.

PRESIDENT JOHNSTON: We will now hear Mr. O. M. Kile on the "Fertilizer Situation for 1919."

THE FERTILIZER SITUATION FOR 1919.

By O. M. KILE, Soil Improvement Committee, Baltimore, Md.

The fertilizer industry in common with most other large manufacturing industries has found conditions so rapidly shifting and changing during the past two years, that it is almost impossible to forecast with any degree of accuracy, for any period, in advance. I will simply try to tell you something of conditions as they exist today and then your guess as to what is going to happen in 1919, will be as good as mine.

The story that I can tell today is very different from that which I would have told some four or five weeks ago—before the signing of the armistice. At that time the big problem was to get supplies of raw materials. It seemed evident, almost inevitable, that there would be a big shortage. During the fall season manufacturers were able to fill only 75% to 85% of their orders, depending on location—the Chicago manufacturers running a little less, and we here in the East running a little higher, since we could get more of the raw materials from the southern mines by water.

The fertilizer situation for 1919 can best be discussed under three heads; first, supplies of raw materials; second, probable demands; and third, the price trend.

Probably the most important material entering into the fertilizer supply is sulphuric acid. Sulphuric acid is the basis of acid phosphate. It takes a half-ton of sulphuric acid to make each ton of acid phosphate. The production of sulphuric acid is a most important factor in the fertilizer

situation. In 1914 the production of sulphuric acid was a little over four million tons, but because of the demands for war purposes it has been increased tremendously and by the early months of 1919 would have been something like nine and a half million tons. Of course if the plants in process of construction had been completed and placed in operation there would soon have been a tremendous surplus of sulphuric acid in the market, which would in turn have reacted on the price of this commodity and would have undoubtedly brought about a very demoralized condition. Acid would have been sold very cheaply no doubt, but this would have resulted in such a demoralized condition that many would have gone out of business. Whether any permanent good effects would have been secured is doubtful.

But since peace came when it did, it caught the Government with most of its sulphuric plants unfinished, and the War Industries Board issued some two weeks ago an order stopping work on all such plants, and also has just recently issued an order stopping the manufacture of sulphuric acid in all or nearly all the government plants that have been completed—rather a small proportion. From the sudden turn things have taken it seems evident that the production of sulphuric acid will not be so greatly in excess of demand as was expected. There will be plenty of sulphuric acid and probably some surplus, but there will not be such a tremendous supply as to cause a general demoralization of the business.

Phosphate Rock Supplies.

The rock proposition—getting the rock with which to make acid phosphate—is tied up with the transportation problem. Boats were taken off for war uses—boats which normally brought the rock from Florida. Some of these will soon be back on the work and undoubtedly the supply of rock will be all that is desired.

The Tennessee field largely went out of business, for a time because of the difficulties of getting labor. At times it was almost impossible to get labor there. But the labor situation is easing up now, and the more westerly points will get their phosphate materials from that section. For us in

the East there should be plentiful supplies of both rock and acid, and consequently of acid phosphate.

One factor which will influence the rock market, is the foreign demand. Of course, you will appreciate that during these four years of struggle abroad no attention has been paid to keeping up the fertility of the soil. The manufacturing of fertilizers abroad has run down very rapidly, in fact almost ceased in many foreign countries, and the soils have been allowed to deteriorate. So there is a tremendous foreign demand now for fertilizer which will eventually be shipped from this country. One thing that will prevent this at present however, is the lack of tonnage. Boats are needed for more important uses right now. But we will soon, we hope, come to the time when boats may be used in this foreign carrying trade. The producers of rock in the South and particularly in Florida, are anticipating this demand, and that is having a decided effect in holding up the price of rock.

Potash Supplies.

Concerning potash, the situation is much better than last year. Last year we depended to a considerable extent upon the production from by-products, such as the flue dust recovered from cement mills. But the saline lakes of Nebraska have been the chief source of potash supply. The production from the Nebraska lakes has been greatly increased during the past year, and Searles Lake, California, has also become a large producer. In all, the total coming into the market will be something like sixty to seventy-five thousand tons of potash for this coming season, whereas last year perhaps only twenty-five to thirty thousand tons of potash were produced. Many of the fertilizer formulas will contain more potash this year than last. It is very much needed by the potato growers on the Eastern Shore, and by the growers of potatoes in many other sections. It has been found, particularly in the potato growing sections of Maine and Long Island, that the lack of potash has been very deleterious.

Ammoniates.

Turning now to ammoniates we find the situation also greatly improved. Ammonium sulphate ordinarily used in

fertilizers, was taken over by the Government for use in refrigerating plants on board ships and also in the large refrigerating plants back of the lines, in France. There is already some reduction in the necessity for refrigerating plants, which releases a considerable quantity of ammonium sulphate. Large quantities of nitrate of soda are held by the War Department in this country, but a representative of the War Industries Board stated last Friday that this nitrate of soda would in all probability be held by the War Department as a permanent emergency reserve for munitions.

The production of synthetic nitrates—taking nitrogen out of the air and combining it in usable form—has made considerable progress in the foreign countries, more in fact than in this country The situation with regards to nitrogen is very much the same as mentioned concerning the acid plants. The Government was putting up a number of these plants, but the sudden ending of the war stopped them. The big plant at Indian Head, Maryland, was intended to produce large quantities of nitrogen from the air, but it has been discontinued; the plant at Mussel Shoals in Tennessee is incomplete; and the plant at Nitro, West Virginia, has been stopped, as has also the large plant in Wisconsin. So we cannot look for any large supply of this synthetic nitrogen from air sources—not this year at any rate. The increase over pre-war supplies will amount to something like 100,000 tons. In 1914 we produced only 38,000 tons, and now about 145,000, an increase of over 100,000 tons annually in our source of nitrates in this country.

Early Ordering Essential.

Labor enters into the question of supplies and costs, very extensively. This was one of the big problems with the fertilizer manufacturer all through the fall. Urgent appeals for early ordering were made, because of the physical impossibility of concentrating orders into the few months in the springtime, and getting them out in time for spring planting. This has all been set forth in detail at various times, so that you all have a thorough understanding of the situation, and know why it is necessary to distribute production over a longer period of time rather than concentrating

in the months of February, March and April of every year, and particularly of this year. The sudden easing up of labor conditions has helped to some extent. The fertilizer companies are able to get more labor, and this will help the situation, but it is still necessary for attention to be given to this problem of early ordering. If everybody holds off until late in the season—until February or March—and then the orders rush in, I don't see how it will be possible for the fertilizer manufacturers to get out the supplies that are needed, and get them actually shipped to the farmer in time for use on the spring crop. The transportation situation enters into this problem also. While the war is over, the means of conducting the war and the necessary machinery of war are still in operation, we are still moving troops in tremendous numbers moving them back from camps, and moving them to other camps. Materials that were ordered some months ago are still being collected in the various camps—munitions and supplies of various kinds—and the railroads are still tied up and it is going to be several months at the very least perhaps six months—before we can expect a great deal of relaxation along this line. So we must not expect to order fertilizer today and get it next week, the way we did before the war.

Probable Demands.

Just a word now about the demands for fertilizer. You are not so much interested in that feature, and I will touch lightly upon it. The increased program of the Food Administration, which calls for the shipping of two-thirds more food abroad this year than last year—twenty million tons as against twelve million tons—will bring about a great demand for all the food that can be produced, for farm machinery, fertilizer, and all things that go to make up the necessary tools of production of farm crops. Mr. W. D. Huntington, President of the National Fertilizer Association, last week said that he believed that larger quantities of fertilizer—much greater this year than ever before—will be needed. The farmer is guaranteed the price on wheat. This is set for next harvest. While the price of corn is not set, it usually follows in sympathy with wheat. The price of beef and pork

is not set, but it is fairly well stabilized, because of the stabilization of the price of grains, and the big demands abroad. There will probably be a larger demand abroad for meats rather than for grains, and that will help to stimulate the demand for meats in this country. The first effort of the growers of food will be to produce those foods which they can turn into actual food in the shortest possible time, and therefore they will raise grains rather than meats for the first year or two. Their herds have been destroyed, their breeding stock is largely gone, and it will take years to get it back. The feeling is rather general throughout the country that the price of meats and stock and the price of grains will be good for at least another year or two to come, and the farmer will feel justified and safe in investing in fertilizers and machines, and whatever may be needed in order to produce up to the limit for at least the next year or two to come. Further than that, few people are willing to risk an opinion at the present time.

This brings us to the question of prices, uppermost in many people's minds today. Many people are hoping that prices will fall. Frankly I am not able to say what is going to happen in the near future. I have interviewed a number of fertilizer companies, and they have absolutely no intention of reducing prices. I was fortunate enough to be present at the great Reconstruction Congress at Atlantic City last week, and the tone of the entire congress was that because of he nature of existing conditions prices could not drop with any degree of rapidity. The feeling was general that there would be and must be a gradual falling off, but that as long as labor is high, prices must be high. Mr. Floyd Todd, Vice-President of the John Deere Plow Company, said that "since labor makes up such a large percentage of the cost of manufactured articles, not only the finished product, but also of the raw materials, and as long as labor must live on $2.20 wheat and $15 to $17 hogs, and other living in proportion, it would be absolutely impossible to bring about any material reduction in prices." That seemed to be the opinion throughout the Congress. Taking the fertilizer industry specifically, we must remember that 85% to 90% of all the raw materials that go into fertilizers for next spring's goods are either on

hand or were contracted for, and perhaps on the way to the factories at the time the armistice was signed 80% to 85%, perhaps as high as 90% in some sections of the country, and they paid war-time prices for them. Of course, you can readily see from this how impossible it would be to bring about any material reduction in prices in time for spring planting. There will possibly be in the next few months some little falling off in the price of labor, but the tendency right now seems to be to keep labor prices up.

The best I can say as far as prices are concerned is that practically all factors making up the cost figures are just the same as they were before the armistice was signed. All raw material prices today are at practically the same levels, labor is costing exactly the same, and selling costs as yet are no lower. On this basis I can see no probability of early material reductions in prices.

Prices must undoubtedly tread downward but whether conditions will change sufficiently to bring about material reductions before spring planting time is very doubtful.

A MEMBER: You did not mention anything about bone meal.

MR. KILE: In proportion to the whole the amount of bone meal is very small. It cannot have a material influence on the market, it follows in sympathy with the rest.

MR. F. E. MATTHEWS: How does the potash we get in this country compare with the German potash?

MR. KILE: Taking unit for unit, percentage by percentage, the potash as produced from the Nebraska Lakes and from Searles Lake in California, is exactly as valuable as the German potash. That is, where the potash is found in conjunction with anything else, you only pay for the soluble potash.

MR. MATTHEWS: Just as soluble?

MR. KILE: Just as soluble and just as valuable. Now, just one word in connection with the foreign supply. The domestic supplies are bound to be rather high in price because of the way in which they are made. The water of the lakes contain only four to five percent of potash, and it has to be evaporated down, this is a very expensive proposition. We also get potash as by-product from the cement industry, and that does not depend so much upon the cost of production. The

plants now have their apparatus installed and the potash produced is entirely incidental to the main product. Regarding the foreign supply, however, since Alsace will be returned to France, if we do buy it abroad we will in all probability get it from France instead of Germany because the Alsatian fields are just as valuable, and are being worked to a considerable extent now. Production in Alsace is, however, a little more expensive than in the German mines.

DR. WOODS: I would like to ask if the recent production of iron ore has opened up a very large source of potash.

MR. KILE: I did not mention this specifically, I merely referred to other by-product sources, and had in mind several of that kind. Many iron ores do contain a fair percentage of potash, and it has been found that by certain modifications in the reduction process in passing the ores through the blast furnaces, this potash is brought out in a form valuable as fertilizer. The Bureau of Mines has given out the statement of a possible production in this way as high as 80,000 tons a year. I believe, however, that this has not been developed to any extent as yet, because of the lack of necessary modifications in the plants. It required installation of extra machinery and during the war it was hard to get machinery or equipment of any kind. It is quite probable that this will be a future source of potash for this country. It is a by-product, and after the installation is once made then it is a question of actual cost of manufacture from that point on, because the pig iron is the principal product and the potash is only a by-product. But we can look for some supplies from these sources, and the fact that we have those supplies will act as a sort of retarding factor to hold down the price on foreign goods. We will profit in this way by the development of domestic supplies, even though there is not enough to meet our requirements.

MR. TEMPLE: Can you tell whether there is a probability of competition between France and Germany?

MR. KILE: That is a little difficult at this early stage of the game to state what the situation will be as regards the competition between these foreign countries. I don't believe I would be able to make any statement on that at all.

MR. MATTHEWS: Do you know of any difference in the agricultural production value as between synthetic nitrogen and nitrate of soda.

MR. KILE: No difference so far as I know. The only point is that some forms of synthetic nitrogen have to be used with a little more caution than nitrate of soda and ordinary ammonia. They cannot be used in large quantities without being mixed with something else. Cyanamide must be used rather carefully in making up a mixed fertilizer. It must be mixed thoroughtly with other materials, but in such a mixture it is entirely harmless and so far as we have been able to determine just as valuable as sulphate of ammonia or nitrate of soda.

PRESIDENT JOHNSTON: Next on the program is Dr. A. L. Quaintance of the Bureau of Entomology, U. S. Department of Agriculture. As Dr. Quaintance could not be here, the subject "Dust versus Spray" will be presented by Mr. E. H. Siegler.

THE DUSTING METHOD.

E. H. SIEGLER[1],
Deciduous Fruit Insect Investigations,
U. S. Bureau of Entomology.
and
JOHN W. ROBERTS,
Fruit Disease Investigations, U. S. Bureau of Plant Industry.

One of the more important questions confronting fruit growers at the present time is the status of the dusting method. There has naturally been considerable interest in this subject since fruit growers, as a class, are progressive and eager to adopt anything that will be to their benefit. For the past several years orchardists, state experiment station workers, the office of Deciduous Fruit Insect Investigations in cooperation with the office of Fruit Disease Investigations of the U. S. Department of Agriculture have been active in testing dust materials in comparison with liquid sprays, and as a result, much data has been accumulated. We are very glad of this opportunity to present to the Maryland Horticultural

[1]Published by permission of the Secretary of Agriculture.

Society a short report on the dusting method based largely upon the experiments of the Federal Department.

The dusting method has certain advantages over the liquid, important ones being:

1. Speed with which an orchard can be treated.
2. Hilly and rough orchards may be more readily cared for.
3. Practically no time is required to load the dusting machine
4. Less labor is required.

There are certain disadvantages of the dusting method and these will be discussed later As a consequence, the question of employing dusts becomes an individual one which each grower should decide for himself after weighing the advantages against the disadvantages.

1. Published by permission of Secretary of Agriculture

The cost of the common dust materials—arsenate of lead, sulphur and a filler as hydrated lime, exclusive of mixing charges, is about $6.50 to $8.00 per hundred, depending upon the formula used Basing the cost figures on one pound of dust as having a tree covering capacity approximately five gallons of liquid spray. it will be found that the equivalent amount of liquid spray. 500 gallons—would cost about $5.50 to $6.00 Thus there is little to be said with respect to the relative cost of the dust and liquid materials except that the dust will usually cost somewhat more Especially is this true if the dust is more or less wasted as would occur during windy weather or in treating small trees.

As previously mentioned, the dusting method is much quicker than the liquid, the speed of application being largely governed by the size of the trees, atmospheric conditions, topography of the orchard, etcetera. Under average orchard conditions, bearing apple trees can be dusted on one side without stopping the team, while both sides of a row of smaller apple trees and peaches can usually be treated as the team is proceeding at an ordinary gait.

The amount of dust required is variable depending mainly upon the skill and care of the operator, air currents, size of trees, distance of planting and other factors. No definite quantity can be given that will be applicable under all con-

ditions but in general it may be stated that normal apple trees, 20 to 25 years of age, will require about two pounds of dust.

It is not possible to state specifically just what are the best formulas for the various orchard conditions but the formulas given below are now being used quite generally.

FORMULA I.

Arsenate of lead, powder.....10 to 15 per cent.
Sulphur, superfine .....90 to 85 per cent.

This formula is for use where both chewing insects and fungous diseases are present.

FORMULA II.

Arsenate of lead, powder.....10 per cent.
Sulphur, superfine .....50 per cent.
Filler (hydrated lime or gypsum).....40 per cent.

Owing to the use of a filler the cost of the ingredients in this formula is less than in Formula I. Its fungicidal value, however, is less than Formula I on account of the reduction of the sulphur content.

FORMULA III.

Arsenate of lead, powder.....10 to 15 per cent.
Filler (hydrated lime or gypsum) .90 to 85 per cent.

This is for use against chewing insects only.

Sufficient tests of the dusting method have not as yet been made to establish without qualification its true value under all conditions. As a matter of fact, opinions based on practice and experience are somewhat divided although successive tests by the Department have led to a few conclusions which will probably stand unless some changes in the dust materials or method of application are made.

According to the Department experimental data, a light infestation of the codling moth can be as well controlled by the dust as by the liquid sprays. In orchards where this pest is abundant, the dust has generally proved inferior.

Repeated tests by the Department and certain Experiment Stations have shown that the dust is not an effective agent against apple scab, whereas liquid sprays have given satisfaction. On the other hand, certain dusting experiments from other sources indicate that dust applications compare

favorably with the liquid in the prevention of apple scab.

With regards to the summer treatment of the peach, it is probable that the dusting method will prove a satisfactory substitute for the liquid in the control of curculio, brown rot and scab. Our experiments show that the dust is effective against peach scab, but as yet we have not obtained sufficient data on the curculio and brown rot on account of their comparative absence in the experimental orchards.

Some success has been reported from sources other than the Department, as to the control of sucking insects, as aphids, scale insects, by means of dust materials. These tests were of a somewhat preliminary nature and hence no definite conclusions are warranted.

In summarizing our data on the dusting method it is found that dust sprays may be employed to advantage:

1. In orchards where liquid spraying is practically impossible owing to
   (a) Remoteness from water supply.
   (b) Roughness or hilly nature of the land.
   (c) Scarcity of labor.
   (d) Softness of soil.
2. In large orchards where time does not permit covering the orchard with liquid sprays during the critical periods.
3. In orchards but lightly infested with the codling moth and having varieties resistant to apple scab.

It will, therefore, be well for the present to continue the use of liquid sprays in apple orchards for the control of:

1. Medium to heavy infestations of the codling moth.
2. Apple scab, leaf spot and certain other diseases.
3. Insects and diseases requiring dormant treatment.
4. Sucking insects.

In the treatment of the peach, it is probable that dust sprays may be safely substituted for the liquid for the control of curculio, brown rot and scab.

MR. JOHNSTON: Mr. W. Lee Allen who was to lead in the discussion on this paper had made another engagement and cannot be here. Are there any questions?

A MEMBER: Have you made any experiments with the dormant spray?

MR. SIEGLER: This year I happened to be testing out several dormant sprays against the scale. I think those who have made dormant tests have not all yet come to any conclusion as to their value.

MR. COHILL: Do you know what States have made these tests?

MR. SIEGLER: The Province of Ontario made some tests against the scale insects, using sodium sulphide, and reported it favorable against the scale insects.

MR. COHILL: How about the cost?

MR. SIEGLER: I don't know that. He does not mention that. He does recommend, however, the sodium sulphide for the scale insect. That is the result of preliminary tests made by him.

MR. FARLEY: I would like to know what the department has recommended for peach scab?

MR. SIEGLER: We have no particular formula. The peach scab is a fungus, and not very difficult to control, and I am under the impression that a formula carrying anywhere from from 75% to 90%—how much filler would that require?

MR. FARLEY: The amount of sulphur that you would dare to apply to the peach foliage without causing injury you say from 75% to 90%—how much would that require?

MR. SIEGLER: In our formula we put about 10% of arsenate of lead to 90% of sulphur; sometimes only 50% of sulphur and make up the filler with lime.

MR. FARLEY: Do you use 10% of lead and 90% of sulphur without injury?

MR. SIEGLER: Yes, that has been the experience of those working on peaches. Some experiments show damage, but that depends upon the method of the applications.

MR. FARLEY: The reason I asked the question, is that in New Jersey our experience has been that one of the greatest drawbacks in dusting was the fact that in some of the earlier experiments with us, the entire orchards were defoliated, and the trees never recovered from that defoliation, the explanation being that an insufficient amount of lime was used in connection with the sulphur, and I wondered if that ques-

tion had been definitely settled by the Department of Agriculture in their later tests. Some of their tests were conducted in New Jersey, and the men on those places where they were conducted have done everything they could since that time to discourage the use of dust, due to the fact that it, arsenate of lead and sulphur without any lime, defoliated the trees.

A MEMBER: What was the percent?

MR. FARLEY: 10% of lead and 90% of sulphur. In our experiments we had the same result.

MR. FARLEY: We have done very little work with dusting on apples. We figure that it has not yet reached the stage for apples, but we recommend it for peaches, but we don't recommend the use of more than 65% or 70% of sulphur with at least 10% or 15% of lime. It is a very live question among our growers. At a meeting last week one of the growers stated that he had used 90% sulphur and 10% lead with no injury. That is an exception from a great many who had used that with serious injury.

A MEMBER: Wouldn't that depend on the amount of dust that came out of the blower?

MR. FARLEY: Possibly—that is what I was trying to get at. Our growers are much interested in the formulae to be used for peaches. In the last six months, in one section at least twenty-five dusters were bought in the last two or three months. Our growers are all ready to go in for that if they can be shown that it is a good proposition for them—they are very much interested.

MR. J. A. COHILL: Now, we have talked a lot about this matter, but have not gone very far, and I think the State College has been very good in sending a man out to get us facts, and he is here. Mr. Cory has a very complete report of the work in this State on the dust question, perhaps he will give us the figures on it.

MR. CORY: Mr. President—I hardly claim any such thing. We have some figures that would probably interest you. We conducted some limited tests on peach dusting and apple dusting. Our peach work was done with 65, 25 and 10 mixture. It gave very good results, no defoliation as Mr. Farley speaks of. There was one difference that cropped out be-

tween dusting and spraying, quite remarkable and one well worthy of your attention. Shipments from our place to the Bureau of Markets showed that dusted peaches so shipped went down, developing brown rot to a greater extent than the sprayed peaches. There was one factor that did not seem to have been taken into consideration. The dusting was done on the Eastern Shore and in Western Maryland. In Western Maryland the results were taken primarily to ascertain the control of the codling moth, and at the time of picking there was only 3½ to 4% of codling moth, about the normal percentage for sprayed orchards. We seldom get better results than that with the spraying. The general run in the Western Maryland orchards had very good color and good general quality of fruit. There was very little disease in the mountain orchards, but there was no difference between the spraying and the dusting in that respect. Possibly with more fungi present we might have found some differences. On the Eastern Shore the dusting of apple orchards gave in the neighborhood of from 75% to 85% clean fruit, the spraying gave slightly higher, possibly 5% higher, absolutely clean fruit.

Speaking now of apples—the work on the Eastern Shore on apples, and the difference there showed from around 40% to 50% clean fruit, so you see that we had had enough disease there to show a difference. There is no doubt in my mind personally that Mr. Siegler is quite right when he says it is an individual proposition. For example, I was in the orchards of a man in the Shenandoah Valley, and the owner there told me that he had purchased three dusting machines as insurance, and if he had not had that insurance this year he never would have been able to make a crop.

In mountain orchards where water is scarce, it is hard to haul, and where labor conditions were as bad as they have been in the past year it seems to me that is is a part of wisdom for a man to dust on a large operation. If he is going to raise fruit for a fancy trade, and in another place he can better afford to spray. We should follow the western system of getting the apples as near perfect as possible. On the peach, there is still a question, because there was not enough brown rot present in our tests for us to determine whether

it can be controlled by the dusts, but it certainly is fairly promising and deserving of considerable more attention.

With regard to the dormant dust, we tried dusting for scale—we used sodium sulphide, dry lime sulphur and liquid lime sulphur. We put that on in March, and found that in the first of July our records showed that all three materials were fairly effective. We had a peculiar condition there that probably affected the results. Immediately after the dust application we had a drizzle of rain, and virtually had all liquid applications. The sodium sulphide gave us the lowest percentage of control, and the liquid lime sulphur gave the highest, with only a difference of about 5% between that and the dry lime sulphur, and between the dry lime sulphur and the sodium sulphide. However, I believe that it is not a practical proposition, because of the excessive waste of material in making the application. When you try to coat bare limbs with the dust you will find that for every limb that is coated, you get a much larger open space, and the ground around the tree is simply literally coated with the material that has fallen to the ground. It seems to me an inpractical proposition to dust unless we can get something very much cheaper than anything on the market.

A MEMBER: Does dust control the curculio?

MR. CORY: On the Eastern Shore it was about the same for spraying and dusting.

MR. TEMPLE: I made some observations in one of Mr. Newcomer's orchards the next year after he began using the dust and it seemed to me that the numerous devitalized branches were the result of defoliation. I did not observe this orchard in a state of premature defoliation but I had a splendid opportunity this year to observe the behavior of the Mason Shehan peach orchard on the Eastern Shore. I visited this orchard about every two weeks to observe it closely and to make notes on it as it was a cooperative dusting and spraying experiment. Self-boiled lime-sulfur 8-8-50 and sulfur dust 65-25-10 were used side by side. There was slight injury to the foliage manifested by more or less circular dead spots in the leaves which resulted in a somewhat premature dropping of the injured leaves in September, whereas the adjacent trees receiving the liquid spray were

green and in excellent condition. This difference was sufficiently marked to have been photographed.

A MEMBER: Same variety of peaches?

MR. TEMPLE: All Elbertas.

PROF. CLOSE: Spraying is out of my line, at least, except in so far as it falls to my lot to observe the work in spraying throughout the country. To go back to the question of dust spraying of apples, in the past we did not think so much of sulphur. When it came to diseases we could not touch them. The apple scab simply ran away with us. Under extraordinary conditions where a man had very large orchards and had difficulty in spraying them with liquid spray he might use a dust spray to advantage, so far as the codling moth was concerned.

In my travels this fall in some of the States interested, in Pennsylvania and in Michigan, they are using dust spraying. That is being done in the vicinity of Grand Rapids, in some very large apple orchards. The county agents throughout there are demonstrating the use of dust spray with splendid results. I was in one large apple orchard where the dust spray had been used this season and the results were all that could be asked for, so far as both disease and insects are concerned; the trees were in good condition, the foliage healthy and the fruit clean. In that same orchard some work was done in spraying. About eighteen large Red Astrakans, in the tests gave no good result because of the disastrous work of the apple aphis. They used some form of tobacco dust with no injury—that is worth mentioning, and as I recall cost very little, as they used only a small quantity.

In Pennsylvania I saw the same kind of demonstration work, with Pyrox, lime sulphur and dust spray covering about three acres each, and the dust spray and the lime sulphur were the best, with, if any difference, in favor of the dust. I examined those trees carefully, the foliage and the fruit, and it seemed to me that if I could make any difference at all, the dust was giving a little better results than the lime sulphur, and the lime sulphur was up to the average and above. The results were good, a very little bit of leaf falling, only occasionally. The Pyrox did not give as good results as the dust and the lime sulphur. There is a great

deal of difference of opinion as to the desirability of using the dust spray on apples. That has got to be worked out and settled for every State and every section of the State perhaps. I don't know that it will be wise to advocate the use of dust spray exclusively because somebody is going to fall down and get bad results.

With the liquid spray in some cases under certain conditions it is giving as good results as any one could reasonably ask for.

MR. LEO COHILL: In Western Maryland we find that the dust is the best for our spraying. We carried on an experiment two years ago in Pyrox, lime sulphur and the dust, and after five sprayings we settled on the dust, especially when we picked the apples in the fall of the year. Last year we tried the Pyrox and dust. We found they did better on the dust and kept in better condition than with the Pyrox. This year we used dust exclusively, and we had a very good crop. The Vice-President of our Company in New York says that they found that dust will be the coming preventive, to keep the color on the fruit and protect against disease.

MR. MILLER: What is the comparative expense of dusting?

MR. LEO COHILL: I can give you a line on that. It took the duster three hours to dust thirty acres, and it took the spraying man one day and a half, and just as good a man too.

MR. MILLER: Do you find it necessary to spray both sides of the trees?

MR. LEO COHLL: Well, we had some Baldwins, and they I have known it to blow a mile. The first spray nobody knew we were in the orchard, and a woman a half a mile away wanted to know what was going on, it got in her eyes. We dusted three rows at a time. We started with two mules and our duster.

MR. MILLER: How does it adhere to the fruit.

MR. LEO COHILL: Well, we had some Baldwins, and they never had good color, and we thought we would cut them down—we sold them in the South. The last two years those Baldwins have held up.

MR. MILLER: Have you got the Black Twig tree that is subject to fungus?

MR. LEO COHILL: No, sir, Baldwins, Jonathans, York Imperial and Grimes Golden.

MR. MILLER: What proportion do you use?

MR. LEO COHILL: 85 and 15 sulfur and lead.

DR. SYMONS: How many times did you dust?

MR. LEO COHILL: Five times this year. But you can use your own judgment; it is not necessary to spray five times in every orchard.

MR. TOWSON: It was brought up here last year to watch the lecanium. I guess I have been bothered with that as much as anybody. We have tried all kinds of sprays. I used some oil spray this year, and it killed about half the buds. Fortunately, it ran out and I went to work with the dust, and that has practically cleaned up my orchard. I know it was the dust because there was one portion that I did not go near, and it was full of it, and was practically cleaned out.

MR. ANDREW COHILL: I know ten or twelve growers used dust this summer, and if you were to talk liquid spray to those fellows they would call you a "moss-back."

MR. MILLER: I wrote to the Geneva Experimental Station in New York, and they gave me a decidedly negative report—or rather a positive report, recommending that if I had a liquid spray not to change to the dusting.

MR. ANDREW COHILL: If you have a liquid spray and that spray will take care of your conditions I would not advise you to change. My father has thirty acres in that orchard we used the spray. If the spray suits and can do the work then there is no need to make a change, but in reference to the argument that I had along about the ten or twelve commercial growers for summer work—of course you can't eliminate the wet spray for the spring work. We had six power sprayers; all we use them for is the scale work, spring work. So far as the Experiment Station is concerned, they have made no experiments. This fellow came down here last year, and told us nothing, and his report this year is just about as complete. Talking about the Experiment Station, they don't seem to have done anything. There is one point brought out about the dust, that your dust must be fine. There is a whole lot of difference in the manufact-

uring of dust. It must be fine, and if you have it fine you can't stay in the orchard when they are dusting within one hundred feet of the dusting machine.

MR. MILLER: I did not mean to cast any reflections on Mr. Cohill in regard to the "moss-back." I have a sprayer that should be all right, but it is constantly giving me trouble.

MR. ANDREW COHILL: It will give you trouble and never do the work completely; dusting shows the results in actual time and labor saved. We have two machines, and they dust eight hundred acres of orchards, and on the other hand our power sprayers are laying around anywhere and never did do the work right. We could not do it right, but we do it right with these dusters, and get results, and I am satisfied from the trend of the argument that it is all coming to dust eventually, especially for summer work. That is my idea.

MR. MILLER: What duster do you use?

MR. ANDREW COHILL: We use several different makes of dusters.

MR. SIEGLER: I think it is unfair to say that the Department has done absolutely nothing with regard to dusting. We regard dusting as still in the experimental stage.

MR. COHILL: But you come here and make the same report you did last year.

MR. SIEGLER: You as fruit growers know that dust is still in an experimental stage. Two men perhaps in the same district have obtained different results by the use of the dust, so we cannot say that we know very much about the dust as yet. As I stated in my address this morning, the Department has found where the dust has not been so efficient against apple scab as the liquid spray, and with the codling moth the dust has proven inferior to the liquid spray. Our results are taken from dusting experiments covering experiments in 1914, in Michigan, New Mexico, Washington, Colorado and other places. We do not feel justified in giving conclusive results until we have obtained the data. The Department does not come out with any degree of certainty as commending or recommending dust. We are not guessing and hope never to. We are awaiting sufficient data to justify us giving definite conclusions.

MR. FARLEY: I am thinking of some peach growers who are going to have trouble unless they use the proper mixture on peach foliage. Any peach grower here can go to work and dust his peaches with 90% sulphur and 10% arsenate of lead, and probably get away with it, but in view of our experience in New Jersey—conditions may be entirely different here—we would not dare to recommend the application of dust to peaches with less than 10% or 15% of lime together with the sulphur and the arsenate of lead. The apple proposition is an entirely different matter as every apple and peach grower knows.

There is one other point not mentioned here this morning —one of our large growers in New Jersey did practically all the work at night, he found that the conditions for dusting were better at night, possibly because there was a little moisture on the trees. That is possibly something that will interest some of the growers who want to utilize all the time during the critical period. He found that the conditions at night were different, and seemed to be better than the day time. That is just the experience of one of our growers in New Jersey this year as to the comparative time of application.

Something has been said here this morning about going out and dusting thirty acres in three hours, where the sprayer rig took a day and a half. That was on the hillside or up the side of a mountain, and does not apply in New Jersey. Our growers with level land, with the sprayer outfit with a 500 gallon spray-tank drawn by a tractor will do just as much work as the duster. The tractor will move as fast as the duster with two spray guns and 500 gallons of material. In our experience the sprayer compares so far as the time is concerned to the duster most favorably, but that does not apply to hilly sections.

Another point—curculio—that is one of our worst insects. We have been able to control it with the liquid spray this year. I have in mind a block of forty acres, all surrounded by low land, an ideal place for curculio. This year the man who owned that orchard had 95% of his fruit absolutely free from curculio, if not more, absolutely 95% free from curculio under conditions where curculio was very plentiful.

The only way in which he did it was by constant spraying. He put on his application before the buds opened and the petals fell, and then sprayed seven days later. He had the entire orchard covered again in ten days, and that in our experience in New Jersey is where the large commercial orchards fall down on their curculio control, not being able to make applications at the critical period. The dust comes in better. It is a question of getting it on. One of our large growers this week told me his plan was to start in five and six hundred acres of fruit, six or eight liquid sprayers. He does not want to throw them in the junk heap, and is going to continue to use them. He is going to start in with his liquid sprayers and go through the orchards as fast as a tractor or a good team will go, and then follow that with the duster, and what the spraying outfit fails to hit the duster will. That is his proposition this year.

PROF. COREY: There is one thing I would like to say with regard to the curculio. We normally get 95% control, but do not ever get complete control in commercial work. Our experience agrees with that of Mr. Farley with regard to time of application. For every eighty-eight trees that we sprayed or dusted it took us five minutes longer to spray than to dust. It took us thirty minutes for the dusting of eighty-eight trees and thirty-five minutes for the spraying. Towards the latter part we were able to put it on in shorter space.

Just one other point with regard to the material. We tested it with the best cloth on the market last year, and none of it came up to the requirements as laid by those who have worked with dusting for the longest time. The most of them claim 200 mesh screen the best.

MR. MILLER OF W. VA.: I am a little disappointed that advocates of the two different kinds of sprayers are still so far apart. The folks over in West Virginia in the market for a new spraying outfit, have been waiting and hoping that at this meeting we would have the thing decided and take up one or the other. I have an old dust sprayer in West Virginia, and I was working on it with all the information I could get and my own imagination. I tried to feed the dust in and make it go, but I had the old Cyclone Duster.

We had our own home-made dust, but it is not fine enough; the machinery is greatly improved now. We found no matter how fine we made it it would make a little spot on the leaf, we dissolved it and did everything we could. We have the same thing here today—it has its advocates and those who are still afraid of it, and we have allowed our machinery to run for two years, hoping it would be settled. I believe everybody to have a good outfit must have both. I have made up my mind that I am going to order the biggest liquid sprayer I can get and put my faith on the liquid until this thing is settled. I don't believe it will be settled for five years, and I can wear out my sprayer by that time.

MR. TRAVERS: There are a good many here who have got to be convinced. Mr. Cohill claims that the Federal Department has done nothing at all in testing, and the State Department has done nothing. To prove what the State Department has done, I was sent to the Eastern Shore to test out the difference between dust and spray. This was in Mr. Shehan's orchards in Easton.

We conducted tests of the 85-15 mixture on apples checked against lime sulfur and lead and lime sulfur and nicotine. We also tested dusting against spraying on peaches using the 65-25-10 mixture as compared with self-boiled lime sulfur. The dusting cost was approximately twice that for spraying and the results were less favorable for the dusting. The sprayed plots yielded 90% absolutely clean fruit as against 82% clean by the dusting method. On the apples dust and spray gave practically the same control of codling moth; the dust was better against curculio and less effective by 2% in the control of fungous troubles.

DR. SYMONS: What do you think of the dust?

MR. TRAVERS: I tell you I think the dust is thoroughly practical for people in Western Maryland, where it is hard to get the water. I think it is perfectly practicable there, they can take their machine and stay in the orchard and finish the work. It will cost more to dust than to spray on the Eastern Shore, because your conditions are different and your water facilities are different, the land is level. I would prefer the liquid sprayer on the Eastern Shore, but if I owned orchards in Western Maryland, where it is hard to get

water, I would have the duster. That is just the condition. It would just depend on where I was, but now Prof. Temple claimed that the dust had served to defoliate these peach trees. I must take issue with him, and I can prove it by the owner of the orchards. He came down to Mr. Wall's place, he claimed that the foliage was dropping off on those trees. I could not see it. I asked Mr. Shehan, the owner of the orchards, and he rode up with me, and I asked him to look at the trees and tell me the difference between those that had been dusted, and those sprayed, and he said: "I don't know one from the other." It could not have been noticeable. I could not tell it at that time. Some foliage had dropped off, but the trees were in absolutely good condition.

MR. TOWSON: Elbertas drop all summer.

MR. TRAVERS: No.

MR. TOWSON: It depends on how the orchard was situated. I believe we can stand more than on the Eastern Shore. Where it would kill their trees why we could stand up and thrive on it. There is a difference in the growth.

MR. ANDREW COHILL: That sort of eases up the situation. Mr. Miller says we are very much undecided. It does not seem so. Our friend, Mr. Travers, admits that in Western Maryland it is practicable to use dust. Our friend, Prof. Close says that it is practicable in a great many ways, does not hedge about the matter at all, he knows it is all right. Our friend, Prof. Cory, out here, tells us that it is practicable. The only man that we have not convinced yet is the gentleman from the Department of Agriculture.

I think this is the sort of discussion that these meetings should have. I think it has been a very fine discussion. If I had to talk sharply to the State Department and to the Department of Agriculture, I wish they would excuse me.

MR. TOWSON: How long did it take to spray eighty-eight trees with the duster?

MR. J. A. COHILL: Not over five or ten minutes, surely not over ten. Eighty-eight trees just means like that (snapping fingers.) As much difference as between the Packard automobile and the Ford—it has got the speed and the snap.

MR. HARTSHORNE: One point—how about spraying for the scale in the winter?

MR. J. A. COHILL: Must have two rigs.

MR. TOWSON: We have no more scale up with us.

President Johnston announced the following committees, after which the meeting adjourned:

COMMITTEE ON NOMINATION.

George Morrison,
B. Bentley Thomas,
Frank Hanson.

COMMITTEE ON RESOLUTIONS.

A. P. Snader,
A. J. Cohill,
Richard Vincent, Jr.

COMMITTEE ON AUDITING.

F. E. Matthews,
Andrew J. Hanson,
C. P. Whiteford,

TUESDAY AFTERNOON.

PRESIDENT JOHNSTON: Col. Clarence Ousley could not be be present this afternoon, but Mr. E. A. Miller will speak in his place.

ADDRESS.

By MR. E. A. MILLER, U. S. Department of Agriculture.

Mr. Chairman, Ladies and Gentlemen:

The Chairman has embarrassed me by announcing that I would take the place of Colonel Ousley on your program. Few men in this country can take the place of Colonel Ousley on any program. My appearance before you is wholly unexpected, and I desire only to extend to you the greetings of the Department of Agriculture, which I have the pleasure of representing, and to commend the splendid efforts of your Society during the last few months of great stress.

There is no doubt that the supply of food that was necessary to win the World War was made possible through organization. A number of years ago by Congressional action machinery was put in motion by which a system of county agents throughout the Nation was made possible. After we entered the World War additional Congressional appropriations were made whereby a total of some 6,000 men and women in the 2,500 agricultural counties of the United

States were employed to encourage and to advise in the great production and conservation program that was necessary to win the war. The employment of these extension forces was done by cooperation between the United States Department of Agriculture at Washington and the various State agricultural institutions. This was the official agricultural organization of the country. Cooperating with this organization and standing by it at all times in order to make the work effective were voluntary organizations similiar to yours. It is a well known fact that no organization or functionary of the Federal or State Government can be effective without the support of the people, grouped together in voluntary organizations. The great work of supplying the allied world with food could not have been accomplished without the combined effort of the Federal and State authorities and voluntary organizations like your own.

The thought of going to war was repulsive to our people, but when it became necessary to fight to make the world a safe place in which to live, the people of this country, the farmers of this country, responded in a way that has never been equalled. While there was not as much publicity given to the work of the agricultural agencies and forces as to other war agencies, yet these organizations and forces did their job and did it well. The purpose of the heroic efforts of the farmers was to bring about the destruction of the great organized power in the world that had vicious motives as its purpose. We went about the accomplishment of this grim task and we won.

But what is the problem of today. It is the absolute reverse of this former situation. This great evil in the world has been put down, it has been destroyed. Now the appeal is to produce food and supplies for the world, not to tear down, but to build up; not to destroy but to restore. This is an undertaking that appeals to the imagination of the American people. We did the other because we wanted to help with a repulsive though necessary enterprise. Now we have a work that appeals to the constructive ideals of the American people, that is, to restore the countries that have passed under the heel of the tyrant. The work of reconstruction and restoration is just as encumbent upon us, and just

as vitally important as was the other job. We must not rest on our oars for one moment. We must not for an instant delay our efforts but must, if possible, put forth a greater effort. Hence the necessity for an extended and comprehensive organization of the agricultural agencies and forces of this country.

The Federal Department of Agriculture in cooperation with the State institutions is stimulating during the fall and winter months the extension of all types of organizations that include the farmers of the country for a systematic production program to meet the needs of the world and to maintain a permanent system of agriculture.

I am delighted to have had this privilege of meeting you, and I am sure that the Horticultural Society of Maryland will perform its part in the future in the same efficient and patriotic way that has characterized its efforts in the past.

MR. JOHNSTON: We will now have a discussion on "Summer and Winter Pruning," by Mr. C. E. Bryan.

SUMMER AND WINTER PRUNING.

By MR. C. E. BRYAN, Havre De Grace, Md.

Ladies and Gentleman:

If there is any excuse for my being here and taking up your time, it will be to set you thinking as to your pruning practices, to ask yourselves if you are securing the results you desire, and if not, how you can get them. Probably there is no horticultural practice about which there is less exact scientific knowledge than the matter of pruning. I suppose there is no operation in commercial horticulture in which the "rule of thumb method" is more general. In many of our discussions we assume that what is good practice in one locality, and under one set of conditions, is good in others. That is not always true. The best that we can do is to learn certain fundamental laws and facts, and then work out our own problems, each for himself.

As the apple and peach, are so entirely different in their habits of growth, it would not be practicable to treat them both in any one discussion. Often we find our greatest

No. 5.—View of Community Exhibit held at Grantsville, Garrett County, 1918.

as vitally important as was the other job. We must not rest on our oars for one moment. We must not for an instant delay our efforts but must, if possible, put forth a greater effort. Hence the necessity for an extended and comprehensive organization of the agricultural agencies and forces of this country.

The Federal Department of Agriculture in cooperation with the State institutions is stimulating during the fall and winter months the extension of all types of organizations that include the farmers of the country for a systematic production program to meet the needs of the world and to maintain a permanent system of agriculture.

I am delighted to have had this privilege of meeting you, and I am sure that the Horticultural Society of Maryland will perform its part in the future in the same efficient and patriotic way that has characterized its efforts in the past.

MR. JOHNSTON: We will now have a discussion on "Summer and Winter Pruning," by Mr. C. E. Bryan.

SUMMER AND WINTER PRUNING.

By MR. C. E. BRYAN, Havre De Grace, Md.

Ladies and Gentleman:

If there is any excuse for my being here and taking up your time, it will be to set you thinking as to your pruning practices, to ask yourselves if you are securing the results you desire, and if not, how you can get them. Probably there is no horticultural practice about which there is less exact scientific knowledge than the matter of pruning. I suppose there is no operation in commercial horticulture in which the "rule of thumb method" is more general. In many of our discussions we assume that what is good practice in one locality, and under one set of conditions, is good in others. That is not always true. The best that we can do is to learn certain fundamental laws and facts, and then work out our own problems, each for himself.

As the apple and peach, are so entirely different in their habits of growth, it would not be practicable to treat them both in any one discussion. Often we find our greatest

No. 5.—View of Community Exhibit held at Grantsville, Garrett County, 1918.

problems with the apple so I shall confine myself, in what I say to the pruning of this fruit.

At the outset we might ask ourselves, what are our objects in pruning? Briefly our objects art: First, to so train the young tree that it will, for a long period of years, safely bear reasonably large crops of apples of high quality; and then to bring those young trees into bearing, at the desired time. Second, to so prune the bearing tree, as to maintain a proper ratio between wood growth and fruit spur production, for the obvious reason that we want fruit spurs, and we also want wood production. We must keep these spurs alive, and in healthy bearing condition, instead of allowing them to die out as they inevitably will, if not allowed proper sunlight, air and other conditions favorable to growth.

Another object is to maintain a proper bearing surface in the tree, adequate in extent and properly placed, properly placed for light and air, and so arranged as to enable the tree to best bear its load without splitting. At the same time we must seek to have an equal distribution of the fruit load, thus reducing the tendency to bear in alternate years. One should also prune to develop a sufficiently open tree for the purposes of thorough spraying, and the production of high colored fruit. We want to keep the tree within limits as to height, for the sake of easy harvesting. My individual opinion is that the proper shape to work for is the tripod, with what Dr. Waite calls "dicodemous" branches. In other words, every branch divided into two others. A tripod tree, properly developed, would bear all the fruit that any given sized should be allowed to carry, and it is the method of starting the tree which undoubtedly aids most in providing a proper height and proper bearing surface.

After having established the tripod character, the best results will probably be obtained by heading back three times, including the first heading back, and then confining pruning operations to a judicious thinning out of excess wood. In this connection, I might speak of the question raised last year, of the relative advantages of planting two-year-old trees and one-year-old trees. Prof. Hedrick, of Geneva, New York, suggested that we should always plant two-year-old trees. It is another of those questions where local conditions must

govern. The New York State growers can get good two-year-old trees, we cannot. My experience is that if you can get suitable two-year-old trees with proper branches, they are superior to one-year-old trees. To my mind the reason is a very simple one. With a one-year-old tree it is expected that permanent scaffold branches will be developed during the first year's growth. It is the only time, during the life of the tree in which you will be enabled to get properly placed branches. You expect the tree to make this permanent growth the basis of its future existence. If ideal soil and moisture conditions could be had, you might obtain the desired growth that season, but often you cannot count on sufficiently favorable conditions to promote growth which will make proper scaffold branches. If the tree is cut back in the nursery, where it has not been disturbed, and where high culture is maintained, it will have every opportunity to make proper branches.

In handling bearing trees, let us consider a few of the fundamental, and I think I am safe in saying proved principles. First, heading back is the greatest stimulant to wood growth which can be employed. At the same time heading back reduces the prospect for fruit spurs in two ways. First, by eliminating a good many buds which might become fruit spurs the next year; and second, by stimulating such vigorous growth that actual or incipient fruit spurs will be forced into wood. Thinning out the wood of the tree encourages fruit spur production. It is well established that no pruning practice is so effective in stimulating spur production as thinning out the lesser branches. That does not hold in the wholesale form of pruning which consists in taking a saw and cutting out the larger branches. Experiments in the northwest have proven that such thinning has practically no stimulating effect whatever. A word of caution with regard to this thinning out process, which I learned by bitter experience. There are many varieties of trees which bear their first fruit on long, slender twig. For example, Grimes Golden and in some sections Jonathan and Ben Davis. One must be careful about thinning out or these twigs will be destroyed. Another principle which we can bear in mind is that the buds near the end of the new growth are more

likely to produce fruit spurs the following season. You may verify this any time in your own orchard. Next year they are the one which will produce fruit spurs, and there you see one of the strongest arguments against heading back if you want fruit, because you are destroying the buds, which are most likely to produce your fruit spurs in the following year.

High cultivation, as you probably all know, tends to produce wood, poor culture tends to produce fruit spurs, and proper culture tends to produce fruit. Perhaps you are thinking that I am supposed to be talking of pruning, but these things are inseparably connected with pruning. No pruning can be done intelligently which does not take into account the question of soil fertility, moisture supply, and cultivation, or at least the effect of these conditions.

With these principles in mind it still remains for you to have clearly before you the ends for which you are striving. That is to say, when do you want to bring your tree into full bearing? Where do you want it to bear its fruit? There is great differences of opinion on all these points. Do you want mere numbers of apples, or a smaller number, perhaps filling just as many barrels, but of high quality and better color. In other words, before we can do a good job of pruning we must have a clear conception of the prcatical results we desire, a real comprehension of the fundamental laws of apple culture, an actual knowledge of our soil, and other conditions in relation to this, and then we may consider ourselves only to be at the beginning of our problems with a lifetime of fascinating work ahead of us, constantly lured on by the unattainable will-of-the-wisp of perfection.

As to summer or winter pruning, if there is one fact in connection with this discussion which we can accept irrevocably, it is that the manner of pruning is of much more importance than the time of year in which it is done. For myself, I am convinced that summer pruning in a bearing commercial orchard is impracticable, and even undesirable. We have all been advised to do late summer pruning to bring our orchards into bearing. I have tried it several years with only negative results. There is something to be gained by thinning your wood in late summer as at any other time,

and you can possibly reap some slight advantage because there is perhaps a little less tendency to start buds into water shoots by pruning at that time; but as between late summer and winter thinning, there is practically no choice. If you head back in late summer you destroy, as I have said before, the very buds which the following season would normally develop into fruit spurs.

In the case of young trees, summer pruning can be very well practiced in early summer. In June, or as soon as a proper length of wood growth has been attained, pinch back and you will get new branches, and add another story to the tree, similar to the results which would have been obtained if you had waited another year after winter pruning. It is a fact which I cannot scientifically explain that the buds produced later in the season on those new branches are more apt to develop into fruit spurs than are the buds on wood produced earlier in the season, so that if that we will pinch back the young tree in June, at the same time thinning it again in the winter, we are following what I consider the best method of pruning young trees. When you want to bring your young tree into bearing, stop heading back and thin out in the summer.

I said before, several times, that thinning is the best means of producing fruit spurs, and consequently fruit. Where this practice is followed over a term of years, as it is in many parts of the Northwest, the result is that the trees begin to get too thin, and have not enough foliage to protect the tree from the sun, and the bearing surface itself becomes unduly reduced. The method evolved to correct this; which has been found very satisfactory, is to pinch back in June, practically as for young trees, thereby producing new branches and then thin in the winter.

Summer or winter pruning is after all largely a matter of individuality. In dealing with living, growing things it is not practicable to set rules of exact precision. It may well be left to the individual to decide if he will prune in summer or winter or both. The important thing is to understand the basic facts, and then prune to secure the most desirable results.

PRESIDENT JOHNSTON: The question is open for discussion, I know Mr. Bryan will be glad to answer any question.

DR. SYMONS: Mr. Charles Pergler is here as the American delegate of the Czecho-Slovaks, at the invitation of the Southern Commercial Congress, and he has asked the privilege to address this audience.

ADDRESS BEFORE MARYLAND HORTICULTURAL SOCIETY.

By MR. CHARLES PERGLER,
American Delegate of the Czecho-Slovaks.

Ladies and Gentlemen:

There have been a series of accidents which somewhat have interfered with this session. After all, lengthy speeches are made, only if we realize certain things.

There are about to be formed, there are now in the process of formation a series of new States, or rather Republics in the very heart of Europe, and one of these is the Czecho-Slovak Republic. Most of us, and I am speaking of myself as an American, as I really am an American citizen—most of us have frequently had difficulty in pronouncing this name Czecho-Slovak, but we will all get over that, and we shall realize that there has come into being in the very heart of Europe a new democracy, a new nation with which this country is bound to have close relations. If you want to think, and if you want to realize what sort of a nation this is, let me tell you that it is the nation which today in Siberia is represented by an army of 100,000 men, who are still, though we are nominally at peace or at least have concluded an armistice, facing the Allies of Germany, masquerading under the guise of the Bolsheviki—100,000 men who were originally conscripted into the Austro-Hungarian Armies, because until recently Bohemia, as the name runs in this country, was nominally a part of the Austro-Hungarian Empire. The Austro-Hungarian Empire is no more. It has gone the way of all terrible scourges, scourges that were built upon a foundation of injustice and cruelty. Instead of the Austro-Hungarian Empire we have the Czecho-Slovak Republic. We are going to have a republic in Poland, and we shall have a re-

public called the Jugo-Slovak Republic. The Jugo-Slovaks are Serbians, but Serbia forms the nucleus of this great Jugo-Slovak Republic. They have a population of about 13,000,-000 men, so you will see for yourself the possibilites that we have for commercial relations with these newly created States, and it is for these practical, as well as sentimental reasons that it is a great privilege to me to be able to speak to you even for a brief while to speak to the Congress of Southern delegates. America has had little opportunity to study the history of these smaller nationalities, but these smaller nationalities have always looked up to America, they are acquainted with American history in general, but your history in particular. I am sorry, and for that reason only, I am sorry that it was impossible for the Governor of Virginia to address you today, because we know what Virginia and what the South gave to the Union, we know all about the Civil War, of course, about the struggle that went on between the North and the South. We fully realize what the South gave to the Union, that Washington was a Southerner, and we like to think so often of one of the greatest figures of American history who was a Southern gentleman—Robert E. Lee. We know that history has no greater example than Lee not only as a soldier but as a statesman in the reconstruction period following the Civil War. These are things that we are fully aware of, these are the things that we have in mind, and that is one reason why we were so anxious to reach the South apart from any practical consideration, and it is important not only to realize that, but for you also to appreciate that while these small nationalities are perhaps little known that they do give a contribution to the world in many and many a line. I don't intend to touch upon the religious feature of it. That is past, and yet as a sample of the greatness of these small nationalities, when we speak of the Protestant movement we must remember that Martin Luther was preceded by C. Johns Horst by one hundred years.

I want to emphasize one thing, we know that business relations are impossible without stable and orderly governments. There can be no progress without order under tne law, there can be no progress without liability under the law. It is for this reason, then, to you, as business men who have an

interest in cultivating relations with such industrial countries, with Bohemia, even now, that I want to call your attention to one fact. We have won the war on the field of battle. As yet the war, however, has not come to its conclusion. The enemy has surrendered in so far as the battle-field goes, he has not surrendered otherwise. They tell us so often in the newspapers that the new peace offensives are about to be launched on the part of Germany. Why, ladies and gentlemen, the new peace drives are not about to be launched, they have already been launched, because the papers are full of speeches, full of false reports emanating from Berlin and Vienna—mark the names and dates—they are attempting to convince you and me that these new nations of mid-Europe are incapable of self-government. If you ask why I speak of this thing, I will tell you, and I repeat that business relations are impossible without stable governments. You cannot export cotton for instance to mid-Europe unless there is law and order there and naturally all of us would deprecate disorderly riots and such things that lately have been going on in Berlin. That is the reason why new dispatches within the last few days are going out from Berlin and Vienna claiming that in Bohemia riots have broken out. You don't find in those dispatches a statement of facts, you always find. "It is reported that here or there a riot broke out"—Anti-Jewish riots. Always "it is reported" but no facts were given. They are never forthcoming, it is not in the interest of the German propaganda to tell the truth. They never told it during the war, and even now they are following in the footsteps of Von Bernstorff, and Boy-Ed and whatever their names may be. This must be guarded against not only because they give a false indication of what is going on in these small nationalities, but especially at the present time it is a piece of the propaganda which is seeking to cause friction between Great Britain and the United States and France, and part and parcel of the great drive to cause trouble among the Allied Nations.

Ladies and gentlemen, the civilized nations during this war came together at the cost of untold millions of treasure and the cost of millions of the best lives in Europe and the United States. As a result the barriers between England

and France and the United States and these small nations are down and those of us who have in view the perpetuation of civilization and the Anglo-Saxon influence in civilization must see to it that the barriers shall never again go up, that they will remain down. These are the things that I want to emphasize, as I say for sentimental and for practical reasons, as well. Let me assure you that these nationalities will find in Europe a stable form of government, that they shall be nations with whom you will be able to deal in business ways, and in other respects. They talk about the political incapability of the Slav, you know our German friends have written books on the political capability of the various nations—for instance a Columbia professor who figured in the last day or two in the investigations, wrote two or three volumes saying that the Slavs are not the people to found stable governments, only the Teutonic races could, and he is now before the Investigating Committee. I want to tell you one thing, that the history of this war has shown that there are elements in middle Europe capable of founding stable and permanent governments. You will find them among the Slavs, the Russian people to the contrary notwithstanding, and even the time will come when Russia will have a stable government, and when the anarchists will be driven out, I want to say that the reason for present day conditions in Russia is to be sought for in the old form of government, the autocratic form of government does not teach the people to govern themselves. Their old form of government was really German, Russia was ruled from Berlin. They may claim the credit for the situation in Russia, for it follows because they really ruled in Russia, they caused the present condition there.

If you want proof of the ability of the Slavs to form a stable government, let me call your attention to the nation to which I have the honor to come from, the Czecho-Slovak. When the war broke out the order went out to organize on foreign soil armies that would fight against Germany and Austro-Hungary, today there are hundreds of thousands in Russia, and others will follow from France. When these armies were originally organized there was no recognized legal or political authority, no authority in international law to which they were subject, yet they organized what in the

eyes of international law is a political entity, the Czecho-Slovak National Council—the discipline was the most rigid any army ever experienced. Some of you have proof, I believe, of the political capability of the Slav.

That is not the only thing that I want to call to your attention very briefly. In America there is nearly a million and a half of Czecho-Slovaks, both Czechs and Slavs. The South has not had its due proportion of this immigration. I know, I am fully aware of some of the conditions in the South, the word "immigration" is perhaps ill-advised. Well, there will be no Czecho-Slovaks to immigrate after this war, these people will be needed in their own country, in their own home, but you have made a mistake. There are a million and a half of them in the North. I come from the State of Iowa, we have no better farmers in the State of Iowa than the Czecho-Slovaks, and the men from Nebraska will tell you the same thing. Perhaps it would have been to your advantage if some of these people had gone South. You have a good deal of waste land, which perhaps at this time would not be waste land. That is one indication of the possibilities that lie before the South. But Bohemia is going to be a powerful country industrially. For instance, the textile industry in Bohemia is very strong. That industry gave employment to hundreds and hundreds of thousands of people prior to the war. It will come into being again, and there is no reason why Southern cotton should go to the Czech-Slovak Republic by way of Germany as it has hereofore, if only our Southern friends will go about the thing in the right sort of way. In coal and iron the Czecho-Slovak lands were the richest of the former Austro-Hungarian provinces, which also shows the possibilities of export and import. This is a matter that cannot be discussed in detail at this time, I cannot attempt to give you all the figures which I have with me, all that is possible is to call your attention to the possibilities of the situation, the possibility of close relations and the close kinship which in many ways already exists between the two people. I am sure that the South will be alive to all these things, even now for commercial relations, and for other reasons, to bring to the United States as large a number of Czecho-Slovak students as possible, to send them to the var-

ious universities, to have them go back in order to make the relations between the two republics as close as possible. Surely it is not only to the interest of the South economically, but otherwise as well, and certainly in the interest of the Bohemians and the Czecho-Slovaks to see to it that these students go not only to Yale and Harvard and Leland Stanford, but also to the University of Virginia, and any of the other Southern Universities as well.

Just a few examples of this sort will show you the possibilities. I am sure that the South will realize it and take advantage of all these matters, and follow with interest the formation of the new republics of mid-Europe, and that the interest which the Southern Commercial Congress has shown by placing this matter on the program will be followed in other ways. It is not too much to hope that some day the Southern Commercial Congress will see to it, and see to it in a not far distant future, that a Southern business man goes to the City of Prague, the capital of the Czecho-Slovak Republic and other parts of the new land, there to establish commercial relations which shall become permanent and which will make known in Bohemia the name of America, and particularly of the South.

I thank you.

A representative of the Governor of Georgia responded to the address of Mr. Pergler, and invited the Czecho-Slovaks to come to Georgia.

PRESIDENT JOHNSTON: Ladies and Gentlemen, I would like to thank these gentlemen for their addresses. They have been very interesting and instructive.

Mr. E. N. Cory, State Entomologist, will now talk to us on "The Oriental Peach Moth."

THE ORIENTAL PEACH MOTH.

Laspeyresia molesta Busck,

By E. N. CORY, State Entomologist.

This is a subject that is of considerable interest to all of you potentially. From one standpoint at least, whether you are a peach grower or an apple grower, you may possibly be

interested in the pest. There has been in the past some suggestion about quarantining the areas that are infested with this pest in order to prevent its spread. Our investigations have developed the fact that the quarantine of nursery stock is only a minor measure in controlling the distribution. The pest may be distributed upon fruit nine times to one time on nursery stock. Therefore, you see that should the matter of a fruit as well as a nursery quarantine be considered, you will be vitally interested. But in the last month a conference was held in Washington of all the entomologists in the East at which time the matter of quarantines was thoroughly gone into and I believe laid aside at least for the present. I want to tell you something about the habits, the life history and show you slides of this pest to familiarize you with it and in order that you may see that there is no necessity for such a movement.

The pest was introduced into this country from Japan, in all probability in the neighborhood of Washington in 1915. The Government issued a brief account of the insect and pointed to its potential danger. The potential danger of any insect, that is the destructiveness of any insect, is dependent upon its feeding habits, the number of broods, and the range of food plants. Knowing that this insect burrows into the twigs and fruit; that it has four broods or possibly more during the year; that it feeds upon peach, cherry, apricot, and possibly wild cherry twigs; that it infests the fruit of peach, apple and pear, it is the natural thing to consider that it is dangerous, or that it may become a very dangerous pest. All of these factors, however, are off-set at times by certain other factors; the parasites to which the insect is subject; the control measures that man uses and the meteorological conditions which govern the extent of the distribution of the pest, and governs its activities. This pest which was seemingly a very important one; that potentially might have become very serious now seems to us will have about the status that the codling moth has, and, therefore, we feel that we need not fear the pest as much as we had expected.

The egg is laid on the under side of the leaf. The worm hatched from this egg goes into the twig, often coming out of one and going into others, and finally may burrow into

several twigs. It usually emerges from the stem to pupate and the adult emerges in about twenty-six days from the deposition of the egg. There are four broods during the year.

The control of the pest is rather difficult. Like most small larvae that feed in twigs, they seem to reject the first few morsels, and it is difficult to poison them. However, we have found that by the addition of 40% nicotine to the proper sprays that a large percentage of the eggs are destroyed by the application. It seems where the pest is present in large numbers that we may have to modify our spraying program.

In the peach orchard a good practice would be a thorough application of lime-sulphur in the liquid form in the winter. Then the application of self-boiled lime-sulphur, black leaf 40 one to 800 and 1½ lbs. of arsenate of lead right after the petals fall, without waiting for the shucks to come off. We certainly found that it was necessary last year, and some other years that the spray goes on immediately after the falling of the petals to prevent brown rot from setting in. That is also important from the standpoint of curculio control. then another application at the end of ten days or two weeks, preferably ten days, on order to get late appearing eggs, that is, the eggs of the late appearing moths. The moths do not all come out at once. They come out over a period depending upon the amount of larval food they have had and the location in which they hibernated. The third application should follow after an interval of four weeks.

We have tried using arsenate of lead and arsenate of lime in the sprays. We were of the opinion that arsenate of lime would help to control the pest, and we still believe that it will affect them. Our experience in the last year warns us, however, to go slow with the application of arsenate of lime or even arsenate of lead. There has developed in one of our orchards some twig injury, that apparently comes from the arsenical applications. Where arsenate of lime is used in combination with four pounds of quick lime, or when it is added immediately before spraying, to spray solutions that contain lime, there has been little or no injury. We have seen injury where the material has stood for some time, after the arsenicals have been mixed, before the material was put on.

The natural control of this pest by parasites is quite efficient. We find that at least 60% of the eggs are destroyed in this way, so you see natural control is an important factor.

Our investigations of this pest the past year are the ones upon which I base the prediction that the pest is not going to be so important as was indicated at first. We found in examining thousands of peaches of four or five varieties that the average destruction ran less than 5%. In only one case, and that was on Champion with a very light crop this year, did the infestation run higher than 5%. This was at College where there is a very much heavier infestation there than any other place in the State.

The twig measurements on numbers of trees show that there is only a difference at the end of the season of 1 inch growth between the infested and the uninfested in favor of the infested twig. From that standpoint it apparently is not very serious.

MR. TOWSON: How would dust affect them?

MR. CORY: I believe that the dust might possibly have the same effect as the dried particles of spray. We observed that particles of spray caught and killed the larva just after it hatched from the egg.

MR. TOWSON: What would you recommend for a spray?

MR. CORY: Self-boiled lime-sulphur, 1½ lbs. arsenate of lead and black leaf 40, 1 to 800.

MR. HARRISON: Would you recommend where infestation is visible or seen that they be trimmed, cut back six inches?

MR. CORY: It all depends upon the extent of the infestation. If you have a slight infestation, yes, because then the pruning won't affect the crop. If it is in every twig end you have got to consider the effect on your fruit crop the next year.

PRESIDENT JOHNSTON: I will now call for the reports of the County Vice-Presidents.

Dr. Symons gave the announcements for the following sessions of the Convention.

MR. CORY: Mr. Bentley Thomas asked me to present the report of the Nominating Committee:

President—A. P. Snader, New Windsor.
Vice-President—E. E. Nock, Pocomoke.
Secretary-Treasurer—T. B. Symons, College Park.
Assistant Secretary-Treasurer—S. B. Shaw, College Park.

and the County Vice-Presidents are the same as last year with the exception of Mr. G. H. Harrison for Worcester County in the place of Mr. G. A. Harrison.

DR. SYMONS: I deeply appreciate the consideration of the Nominating Committee in again suggesting my name, but I feel that as I am Secretary of the Maryland Agricultural Society it is only proper to allow another man to take the Secretaryship of the Horticultural Society. For this reason I hope the Association will amend the Committee's report to that extent, leaving Mr. Shaw as Secretary of the Horticultural Society, and I will remain as Secretary of the Agricultural Society. You will get another man actively at work and I feel that we must continue to keep each organization distinct, and at the same time you will have live Secretaries of the affiliated Associations. I would like to have this request considered.

MR. COHILL: I think it advisable to let well enough alone. Of course if Prof. Symons absolutely insists upon it, we cannot make him act as Secretary, but it looks as though we had been progressing under his management, and I certainly would like to see him continue as Secretary.

MR. WHITEFORD: I move that the Nominating Committee's report be accepted.

The motion was seconded.

DR. SYMONS: I am perfectly willing to serve as Secretary of the Agricultural Society, but I think it is only fair to allow me to resign from the Secretaryship of this Association.

MR. BRYAN: I move that we amend as Dr. Symons requests.

MR. HARTSHORNE: We all know how much we owe Dr. Symons from the very beginning of his connection with the Society. I think at the present time we should consider his wishes and I think our appreciation of his services would be shown better by our following his desire. That is why I second the motion of the gentlemen to amend.

DR. SYMONS: I appreciate sincerely your very kind request for me to continue as Secretary of the Society, but I feel that

it is a mistake. We should give other men an opportunity. If I were getting out of the work entirely it would be a different matter, but as Secretary of the Agricultural Society I hope to have the direction over all these affiliated Associations. It was not with a view of withholding any help that I might render the Society, but in providing another representative on the Board of the Council of the Agricultural Society. At the present time I am Secretary of the Society as well as Secretary of the Council. One reason why I made this request is that you will have another representative on the Council and at the same time have a Secretary of the Society.

MR. BRYAN: I agree exactly with my colleague across the hall that we should consider what Mr. Symons wants. It is due him at least that we give him credit for speaking with sincerity and saying what he means. In view of that feeling on my part, I make a point of order that the previous motion was not in order as there was a motion before the house to amend.

MR. WHITEFORD: I withdraw the other motion if that is the wish of the Society.

PRESIDENT JOHNSTON: We will have to reconsider.

The motion to accept the amendment is before the meeting. You have heard the motion. It has been moved that an amendment be made to the report, at Dr. Symons' request, eliminating his name as Secretary of the Society.

MR. BRYAN: I move that at the request of Prof. Symons, and in view of the reasons given by him, the report of the Committee be amended to the extent of removing the name of Mr. Symons as Secretary-Treasurer. and making Mr. Shaw Secretary instead of Assistant Secretary-Treasurer.

The motion was seconded and carried.

MR. HARTSHORNE: I move the Secretary be instructed to cast a ballot electing these gentlemen to the offices named.

Motion seconded and carried.

PRESIDENT JOHNSTON: We will now have the report of the Auditing Committee.

MR. WHITEFORD: The books have been gone over and are reported correct.

Motion to adjourn.

WEDNESDAY MORNING, DECEMBER 11th.

President Wm. J. Johnston presided and called the meeting to order at ten o'clock.

PRESIDENT JOHNSTON: We will first have the address of Mr. E. P. Cohill on "The Importance of Purchasing Fruit Packages Early."

THE IMPORTANCE OF PURCHASING FRUIT PACKAGES EARLY.

By E. P. COHILL, Hancock, Md.

Mr. President, Ladies and Gentlemen:

I do not know if the early purchasing of fruit packages will be quite so important a consideration for this coming year. Last year, we had practically all of our packages, in the shape of staves, hoops, headings and baskets, at home in our packing houses, or in our buildings before the first of January. This year we have not so far bought a dollar's worth of cooperage or packages of any kind, but we do expect to buy early, that is, before the rush season.

There are many advantages in securing cooperage early. We manufacture our own barrels and I will take up that phase of the subject first. By ordering cooperage in January and February, we buy at a time when the mills are anxious to sell. It is a rather slack time with them. Our orders are placed in January, and deliveries are made in February, March and April. We commence to make barrels in February, and continue through March and April. trying to have the cooperage work done and the barrels practically all made and on hand before we begin to pack summer fruit. We do not need barrels until the first of September but if we waited until then to get our supply we would have to take what we could get. Sometimes the quality of material ordered at this time is very unsatisfactory, to say nothing of the uncertainty of securing an adequate supply. When you cannot do this individually, combine with your neighbor and manufacture barrels cooperatively, thus securing better cooperage and better barrels that are more satisfactory in every respect.

The past few years we have been using a great many baskets. Last year we bought baskets at this time of the year for $1.10 a dozen. In August and September, we could not have purchased them for less than from $1.50 to $1.75 a dozen. We found with the manufacture of baskets about the same condition as with the barrels. Early ordering gave the manufacturer plenty of time to have the workmen put up more substantial packages. It seems that the most solid and perfect baskets are made during the winter months. Our experience has shown that late orders are put together hurriedly, even by the best manufacturers.

Another advantage in getting material early, is that not only are better packages secured but it is quite a satisfaction to know that you can go right ahead without delay and pack your fruit when it begins to ripen.

With the present shortage of transportation facilities, your cars may become tied up along the road and possibly side-tracked, if you wait until the very last minute in placing orders. When you should be busy with your fruit, seeing that it is properly packed, you will be looking for your packages and trying to have them delivered. Sometimes errors in shipping will occur. We live in Hancock, Md. Some cars of material consigned to us have gone to Hancock, Missouri; Hancock, Indiana and Hancock, Maine. By waiting until the very last minute to order, such errors in shipping may cause lots of trouble to say nothing of a possible loss.

A MEMBER: You think flour barrel cooperage better than apple barrel cooperage?

MR. COHILL: I did not have any idea of touching on that, but I believe a stouter, better barrel can be made from flour barrel cooperage. As a rule there is practically no waste in this material as it is No. 1 stuff clear through.

A MEMBER: Did you use steel or wire hoops this year?

MR. COHILL: Yes. There seems to be some objections to them. I don't know why.

MR. HARTSHORNE: Because of the effect of salt water on them.

MR. COHILL: We sold some apples for export, but could not export them in those steel hoop barrels, I have not inquired the reason.

MR. MILLER: What is the difference between the flour barrel and the apple barrel? In what way is the flour barrel better?

MR. COHILL: With the flour barrel, the cooper will put up a better package, the staves are uniform, and a little heavier; the hoops are uniform and heavier; the heading is uniform and heavier. An ordinary No. 2 barrel used for apples weighs 20 to 22 pounds. Our flour barrels weigh from 25 to 27 pounds. When packing the head will go right in with no breaking of hoops, nor waste of time if you have a good stiff flour barrel made throughout with good heavy hoops. We figure that the difference in the cost of this material is more than offset by the time saved in our packing shed. When apples are packed in a good, stout barrel, they will go any place.

MR. MILLER: They are just the same size?

MR. COHILL: Yes.

MR. MILLER: In getting this cooperage, do they send the heads already matched, or do you have to match them?

MR. COHILL: They are already matched, and put up in round bales. If one of those bales is broken open, some time is wasted in re-matching them.

MR. MILLER: How about the staves, are they matched too?

MR. COHILL: They are packed in bundles but the cooper must sort them.

MR. MILLER: Do you get the heads and hoops and staves all from the same parties?

MR. COHILL: Sometimes, not always. It takes about one carload of hoops, one carload of headings, and two carloads of staves to make from ten to twelve thousand barrels.

PRESIDENT JOHNSTON: The next subject on the program is "Checking Blight in the Orchard" by Mr. W. E. Sanger. The following paper was presented for Mr. Sanger.

CHECKING BLIGHT IN THE ORCHARD.

By W. E. SANGER, Cordova, Md.

In the spring of 1915, just as the petals were dropping from the blossoms, many of our apple trees presented a most distressing appearance. This was especially true of a row of

28 year old York trees, and a block of 5 year old Jonathan. We were much alarmed, not knowing what the trouble was, since we had not before witnessed such an outbreak of the blight. Apparently every blossom spur was infected, making the trees look like fire had passed over their entire surface, which was heavily set with bloom. To these older Yorks we did nothing, and while 90% or more of the blossom spurs were killed, the injury apparently extended no farther than the individual spur. There afterward proved to be nearly enough bloom left to make a fair crop. These trees of course, were in a settled condition of growth, having little new wood. It might be interesting to mention that a few Grimes' Golden trees right next to these Yorks showed practically no injury at all.

In the younger orchard the damage was greater and more extensive, especially in the Jonathans, mentioned above, and on Yorks of the same age.

I believe but for our efforts to check the spread of the disease by cutting out, many trees would have been entirely destroyed. This orchard of ten acres, also contained Grimes, Nero, Winesap, Stayman and Paragon; all five years planted.

These trees had made very rapid growth, and the wood was of a soft sappy nature. The heads were trained low, and an effort had been made to induce the development of fruit spurs on the heavier parts of the branches. The Jonathan were full of bloom, not only on the outer branches, but the inner and lower parts were also bestudded with bloom spurs. With these conditions present, a general blossom infection like this, on so susceptible a variety as the Jonathan is with us, presented a situation which was indeed distressing.

Appealing to our County Agent Mr. Walls, and through him to our State Pathologist, Prof. Temple, we were advised that there was no known remedy other than cutting out the infested parts. In our case it seemed an almost interminable task. However, we attempted to do it as thoroughly as we could, constantly dipping our shears and knives in disinfectant and applying the same material with a brush to the saw after each cut was made. Having on hand commercial concentrated Lime-Sulphur solution, Prof. Temple sug-

gested that we use this as a disinfectant. Our experience indicates that it is fully satisfactory for this purpose. We also used it for painting the wounds made by the larger cuts, and where the cankers or diseased spots of bark on the main branches were trimmed out. For this purpose we liked it especially. It not only appeared to be efficient as a disinfectant, but it seemed to prevent the decay of the wood. Speaking of the effectiveness of Lime-Sulphur solution, it might be worth while to tell of another trial of this same material. A spot of bark running two or three feet on one side of a large Grimes tree was turning black and apparently dying on the surface, indicating collar blight. We painted this bark several times during one season, with the result that this spot has cleaned off bright and healthy.

To go back to the Jonathan trees in question, these beautiful thrifty trees were badly mutilated. On some the whole top was nearly destroyed, so much so as to appear entirely ruined. By the time we had gone over the trees once, new terminal infections were again showing, so we went over them again and this we repeated four or five times particularly on the Jonathan and York before we had the disease in check. It was indeed a tedious and expensive undertaking, but we saved all our trees—did not lose any of the five-year olds directly from the twig blight—and they are now developing good tops. Apparently the York is about equally as susceptible as Jonathan to the blight, with Grimes less so. While there were many infections on the Stayman, Paragon and Winesap, little real injury occurred on these varieties.

This experience with the twig blight, has led me to the following conclusions: First, to avoid planting in this locality, those varieties most susceptible, such as Yellow Transparent, Jonathan, York, and Winter Banana, etc. Second, to aim, during the winter pruning season, to cut out so far as possible all hold-over cases of the blight; to give especial attention to the removal of soft ended watersprouts on the tree and particularly these that occur near the ground at the base of the tree and in mid-summer to go over the trees and rub off all sprouts. With the more susceptible varieties, especially, keep all twig growth off the main branches. The worst damage by far is done by the big scores coming

from the infections carried in to these larger branches through the little twigs on them. Avoid the undue stimulative of rapid and soft growth resulting from either cultivation, manuring or heavy pruning.

While it is no doubt desirable in some cases to cut out blight in summer, let me emphasize as far more practical value the attention which should be given to preventive measures as mentioned, to which could well be added, a co-operative community effort in the stamping out of hold-over cases of blight, by removing old pear and other trees that may be harboring the disease.

PRESIDENT JOHNSTON: The discussion of this subject will be led by Mr. Andrew J. Hanson.

MR. HANSON: I do not know that I can speak except of the experience we have had. About four years ago we had a bad outbreak of blight. Formerly we had a quantity of pear trees. We took these out as we considered them a source of infection. We also stopped the cultivation of the orchards for about two years. Since then we have been cultivating only slightly.

MR. MILLERS OF W. VA.: What varieties?

MR. HANSON: Mostly Stayman, and Summer Rambo. The Summer Rambo blighted worse than any variety we have.

MR. MILLER: What kind of pears did you have?

MR. HANSON: Lawrence and Duchess.

MR. MILLER: Did they have much blight?

MR. HANSON: Yes.

MR. MILLER: I have a parallel case. By taking out the pear trees we got rid of the trouble that held over from year to year.

MR. HARTSHORNE: Could it set in without any means of getting in?

MR. MILLER: I could not say—of course it had some means of getting in. The question is how it gets in. I had an idea that it was thru the bud. The blight set in while the apples were blooming and the little apples dried up. I find when pear trees and apple trees bloom at the same time you have blight. As a rule they don't bloom at the same time, and you don't have it until they do.

MR. HARTSHORNE: I had a similar experience thirty or forty years ago, when we had an unusual season and both fruits bloomed at the same time. The Kieffer pear with us never blighted at all until they bloomed at the same time with the apples. I want to ask Mr. Hanson, do you trim the blighted apples?

MR. HANSON: Yes, the younger trees. We cut back far enough to get below the infested part.

MR. HARTSHORNE: Have you had experience of having blight in any of the parts of the apple tree except on the twigs?

MR. HANSON: No, only in the new succulent growth.

PRESIDENT JOHNSTON: Next on the program is "The Community Packing House" by Mr. T. L. Smith, County Agent in Washington County.

"THE COMMUNITY PACKING HOUSE."

By THOMAS L. SMITH,

County Agent, Hagerstown, Washington Co., Md.

Mr. President, Ladies and Gentlemen:

It is a pleasure and a privilege to be with you and to address your organization for the first time. Three years ago, while an active fruit grower I became a member of your organization. I have been an exhibitor in the Maryland Week Show, and have enjoyed several of the summer meetings, but I am sorry to admit that this is my first opportunity to attend one of your winter meetings.

In speaking of "the community packing house," let me bring this subject to the attention of your organization and point out.

1st. The need for "community packing houses in Western Maryland."

2nd. The progress made up to this time by such organizations.

3rd. The future possibilities for such organizations in Maryland.

For those of you who heard the address of our ex-president, Hon. Wm. Howard Taft, night before last, it would not

be necessary for me to state that *cooperation* of fruit growers and farmers is directly in line with the world-wide *Habit* of the *Times*. I like the name League of Nations. I also like the name "League of Fruit Growers" and my best definition of a "community packing house" is a league of fruit growers bound together in an organization to improve and perfect their methods of fruit packing and fruit marketing.

In Washington County we have in some sections a number of small fruit growers, whose chief business is raising peaches or apples. They are centrally located near railroads, grouped closely together, and have acquired as up-to-date, and as scientific a knowledge of fruit production as the growers in any section of the East.

The problem which affects Smithsburg fruit growers. Ringgold fruit growers, Chewsville and Hancock fruit growers is not "How to grow good fruit," but "How to market this fruit with the least loss and the greatest profit." In each of these Western Maryland sections there are many orchards, which have been closely allied in every way except marketing cooperatively.

Last year Western Maryland and especially Washington County saw that there was a need for more cooperative packing. It was conceded by many growers that the cost of packing peaches and apples in the individual orchards was too great. The cost of labor, were it to be had, coupled with the short crop of peaches there, made imperative a study of community packing houses by a group of Smithsburg growers last summer.

Let me say here that we must give the credit for starting this study of community packing houses to one of our best and liveliest local organizations, namely the Cavetown Community Club, and to their officers, Mr. J. S. Hartman, Mr. Frank Crowthers, Mr. A. L. Towson, and also to several others. These men saw a need for community packing houses. They secured the best speakers and experts possible to advise them on this subject. Through a committee appointed by the Cavetown Club they made a canvass of the Smithsburg section. What did this committee find?

1st. The usual large number of different kinds of fruit packages.

2nd. A small crop of peaches.

3rd. A shortage of labor in all orchards, and especially of expert packers.

4th. The usual activity of many fruit buyers and commission men to buy the crops in the orchard.

5th. A possibility of poor express car service for small shipments.

6th. A decision on the part of many smaller growers to discontinue spraying or cultivating on account of the small crops.

To make a long story short, Smithsburg decided, after making a three weeks' study of the situation to establish a "Community Packing House Organization." I am glad to say that we were able to form this organization last summer with about twenty growers, but after conferring with certain fruit growers, like Mr. S. H. Fulton, of Sleepy Creek, Theodore E. Wade, Bureau of Markets, and others, the decision was made to postpone building the house or packing cooperatively, in 1918 on account of the extremely short crop.

The plan of the Smithsburg Community Packing House Organization, like similar organizations is:

1st. To build a packing house large enough to care for future needs in the fruit business in that community. This house should be erected on a railroad siding if possible.

2nd. The organization purposes to hire a manager who has the confidence of all the members, and whose duty it is to manage the *packing* and *marketing* of all the fruit grown by the members.

3rd. The fruit will be delivered to the packing house, unpacked or loose, in baskets furnished by the association. The usual custom is to haul peaches in the round bushel baskets. In several associations, I am told, peaches are often hauled as far as nine miles in this way. At Smithsburg the longest haul will be about three miles.

4th. The general plan of packing the fruit is on a *pooled basis*. The price of packing a bushel of peaches is usually from six to eight cents. This does not include the baskets. The baskets or barrels are bought cooperatively. The usual cost of packing apples is 20 to 35 cents a barrel.

Quality and conditions of fruit enters into this cost. If the quality is good, the price of packing will be less because the labor for grading is reduced.

It has been found by many associations that daily or weekly pools are not entirely successful and that the season's pool works best for all fruit. This is especially true where the fruit ripens over a long period, with some growers having large early crops and others large late crops.

5. Briefly, such an association installs enough commercial grading machinery to handle the crop of their members. As a rule, it is easier to secure labor in a small town than it is in the country. Again, a trained force of packing house people under the direction of one man tends to produce a more standardized grade and pack of fruit.

Each grower will have a designated number for his unpacked fruit and as it is received at the house it will be checked by this number. Every grower's load of fruit goes to the grader separately. The number of baskets packing number one, number two or cull grade are recorded at the other end of the packing tables. The receipts for one day's sale are pooled and each grower receives the same proportionate share of money for his number one or his number two, etc., according to the way they graded.

It is advisable that all such organizations should incorporate as this gives them a distinct legal status.

Community packing has been in operation for over twenty years. Ohio, Michigan, Texas, Oregon and other States have many such organizations.

6th. In Western Maryland we hope to form many other organizations like the one formed at Smithsburg, to encourage this central packing and marketing plan, to standardize the pack of fruit and eventually to have a league of community packing houses from Midvale and Smithsburg to Paw Paw and Cumberland. Midvale and Chewsville growers have already begun plans for community house packing in 1919 and with an average crop they should succeed.

I have no doubt that there are many places in Northern and Eastern Maryland where community packing associations could be started advantageously.

Every small grower should welcome such a plan of cooperation. Every man who buys fruit should welcome it because he can buy on grades and when certain grades are once established by these organizations, Maryland fruit will be demanded and will command the top price.

Time will not permit of a full discussion of the many phases of this work. Let me to say, however, that the founders of every cooperation association, such as this, should have a definite plan of action mapped out. The need of strong by-laws is a point not to be overlooked.

The manager of such an enterprise is a most important officer and his powers should not be limited. He cannot be held responsible if he is to be dictated to by each member of the organization or if the officers meddle constantly with his work. He should not be a dictator but a constructive individual. The duties of the manager must be clearly defined before he takes charge.

It has not been my purpose to give a detailed plan of community packing. We all realize that each community has its own problem to solve. From the success obtained, however, in many of our fruit sections, through such a plan, I believe the time is at hand for Maryland fruit sections to adopt this plan of fruit packing wherever practical. Mr. E. P. Cohill has demonstrated its feasibility on his one thousand acre tract. He abandoned three packing houses for one central packing house.

The Bureau of Markets, Department of Agriculture, has made a very thorough study of these cooperative packing propositions, and will be glad to serve any Community with the data they have collected.

Western Maryland is enthusiastic over community packing. It is my humble wish that this enthusiasm may spread over all of Maryland for more community packing houses and more cooperative marketing of fruit.

A MEMBER: Who establishes the price on the fruit?

MR. SMITH: The manager, who has the authority to sell the fruit.

A MEMBER: Is he the selling agent?

MR. SMITH: The manager should have the authority to either sell directly, in carload lots; to store; or to do anything

with the fruit that he considers best. Unless the manager has full authority and the backing of everybody in the organization, he cannot be a very good salesman.

MR. HARTSHORNE: Is the manager a salaried officer?

MR. SMITH: In some organizations he is, and in others he works on a commission basis of 5% of the sales price.

MR. A. L. TOWSON: I heartily agree with Mr. Smith. I am interested in the Smithsburg organization, which is affiliated with the Potomac Fruit Growers Association. Some of our growers at first thought they would not have enough peaches to justify the expense of operating a community packing house. If I had had the foresight it would have paid me well to have put up money to help start such an organization. Unfortunately, we did not seem to feel the need of expert packers this past year. I prefer the Georgia carrier for my fruit. As we did not have enough carriers to take care of the crop, we had to use bushel baskets. Where baskets and crates were shipped on the same day with the same quality of fruit in each, and to the same market we lost fifty cents on each bushel basket. The crates brought $3.50, and the bushels brought $3.00. We know community packing is right, but the trouble is to get people interested in doing what is absolutely essential. We are going to start this work next year if I have to do it myself.

MR. SMITH: With these three communities in Western Maryland the future is very bright for allied cooperation.

A. MEMBER: What kind of fruit is usually packed this way?

MR. SMITH: Peaches and apples.

A MEMBER: Is the community packing house better for peaches or apples?

MR. SMITH: Usually better for peaches. The apple grower has a longer period in which to handle his crop, but it is also a good thing for him.

DR. SYMONS: I would like to emphasize what the speakers have referred to, for the protection of the small grower. This discussion is not so advantageous perhaps to men like Mr. Cohill or Mr. Miller, and some other large growers who can take care of themselves.

MR. COHILL: It is the small grower who keeps down the price.

DR. SYMONS: The small grower cannot market his fruit satisfactorily, and, gentlemen, the biggest problem agriculturists are facing today is the marketing of their products. We have had such an example in the dairy field, and I believe the dairymen of the State, certainly those supplying milk for this city and surrounding territory, have at last recognized that they must have an organization so that when they come to Baltimore and wish to consider the price, they feel that they will be able to say: "Gentlemen, we can deliver 20,000 gallons of milk a day in Baltimore City." When you are organized you can talk business, and can talk it in a legitimate way. You have a certain commodity to sell, and you have a right to know what that commodity is worth. I feel that the modus operandi must be developed with the different interests of the farmer in getting the proper recognition that the farmer should have, and at the same time protecting the community with a reasonable price that will cover the cost of production and allow reasonable profit.

I feel that the greatest work that the County Agents and the different organizations can do is to develop that spirit among individual farmers, and among communities, so that they will at last recognize that individually they do not amount to very much when it comes to selling their product. I sincerely hope that we may be able to develop several community packing houses in the different counties. There are several small growers who are producing fine fruit and selling their product individually and not getting what they should. There are several in different sections of Washington County, particularly around Smithsburg. There is a great field for community and cooperative organization for the selling of our products, and I sincerely hope that our Society will take the lead in organizing this work throughout the State.

MR. COHILL: I want to say in connection with what Mr. Symons said about our not being interested in having the small community organizations that we are interested in such undertakings.

DR. SYMONS: I am sure the members understood me. I did not mean to say that you large growers were not interested in the small growers. But the big men can get along

better by themselves than can the small man, and Mr. Cohill in shipping by carloads has a greater power over the market than the small fellow who must ship in less than carloads. You large growers can get along better under present conditions than can the small men who cannot ship by carloads.

DR. SYMONS: The Resolutions Committee are now drawing up some resolutions. It has been my observation that there has been considerable complaint this year in having packages robbed. What has been the experience of growers in the shipment of packages? I was wondering if it would not be desirable to have a resolution regarding the poor service we are getting.

A MEMBER: I just heard from the shipper of a barrel of apples in West Virginia, which arrived three-quarters of a barrel short.

MR. STOTTLEMEYER: I shipped two barrels to New Jersey, and only one carried. Never heard of the other. Another shipment was sent to Washington, and only one of the two barrels arrived, the other was never heard of.

MR. COHILL: I shipped a barrel of beautiful Grimes Golden to a customer in Chester, Pa., prepaid, but I neglected to notify her that I had shipped them. Some time after that Mrs. Cohill wrote to her, as she did not acknowledge the apples, to ask whether she had received them and she immediately went to the Express Office. They reported to her that although she has been in business in Chester for years, and every man in the Express Office knew her, they did not know how to reach her, and they had sold those apples. They offered to give her $2.39 for the barrel of apples. I wrote her not to accept but to turn the case over to me. They just simply took that barrel of apples and divided it up in the office and reported that they could not find it—they paid what the apples were worth, alright.

MR. TOWSON: I have been supplying a lady near Philadelphia with fruit. When shipments leave our place they should be delivered not later than the afternoon of the same day. This season it was three days before some consignments were delivered and then they arrived in bad order. At the same time shipments went to Roanoke, and arrived in fine condition. The transportation company refused to pay the claims

of the Philadelphia lady for that fruit, which meant a loss of over $200 on that consignment.

MR. HARTSHORNE: Now, that the war is over perhaps we will not have so much trouble. Is it not the case that they will blame the government all the time, and use that as an excuse, and now that the war is over there will not be quite as much trouble, as they will not be able to blame anybody else?

DR. SYMONS: I suggest that Mr. Smith advise the Resolutions Committee, calling their attenion to these matters.

MR. WALKER: I want to bring to the attention of this Society the movement for building a bridge across Chesapeake Bay. There is no interest more widely benefited by good roads and bridges than agriculture. You all know the advantages of having good roads, but we farmers were among those who put the greatest obstacles in the way of good roads. We would be the greatest kickers if the good roads were taken from us. I am afraid that the strongest kickers against building the bridge might be the farmers. This should not be. Our Western Maryland friends only recently realized the fact that they had a sister across the bay known as the Eastern Shore girl. We are there, they found us recently, and they found us to be everything that we were pictured and painted to be. It has been rather difficult to reach the girl of the Eastern Shore, who is growing beautiful fruit and flowers and vegetables, and a great many of you have kept away because of the roundabout way of getting there. We are going to bridge the bay, it is coming, it is coming soon. Whether it costs ten or twenty million dollars it is money well spent. I would like if the Resolutions Committee have not closed their report that they add something bearing upon the favorable construction of a bridge, across the Chesapeake Bay cementing the Eastern Shore with the Western.

MR. TOWSON: I do not believe we ought to take that up. They have the roads, and we are paying most of the taxes for them. We think this younger sister has been well taken care of, and at our expense too. This matter about the bridge has just come up within the last couple of weeks, and I think we had better go a little slow about this thing.

DR. SYMONS: In a statement prepared for the consideration of the Executive Council last night there was a resolution pertaining to the building of this bridge. That matter is under discussion and will come up before the meeting this afternoon along with several other statements. We might defer this matter until all the Society is together, and then we could either endorse or eliminate it as is the wisdom of the farmers at this time.

MR. WALKER: I think that is far better. I did not know it had been brought to the attention of the Association.

PRESIDENT JOHNSTON: Mr. Leo Cohill now will talk to us on "Motor Trucks in the Orchard."

MOTOR TRUCKS IN THE ORCHARD.

By LEO COHILL, Hancock, Md.

In years gone by the use of motor trucks in the orchard was often considered, but it was never felt that they would become a reality. We believed the mule team had come to stay, and must be depended upon entirely to do our hauling. As crops became larger it was found impossible to hire teams enough to move our apples, so we were forced either to hire trucks or buy them. When our first truck was purchased we did not realize that the mule team would be in the way, but on the hills of Western Maryland, where roads are narrow and curves are sharp, the slow moving mule team sometimes gets in the way of a large motor truck, thus causing delay. It was also found that our three-ton truck would move 700 barrels of apples a day to the railroad, a distance of two miles. The mule team moved only 80 barrels of apples the same distance in a day. As a result, the mule had to give way to the motor.

When the efficiency of the motor truck had been demonstrated in operations between the packing sheds and the railroad, it was decided to establish a central packing house in order to reduce overhead charges.

Our next problem was the moving of apples from the orchard to the packing house. The largest haul was a distance of two miles. After two years trial and experience, it was found that a one-ton truck was the most satisfactory

sized equipment for this work. With it we could haul 1,000 bushel boxes of apples from the orchard to the packing shed in ten hours. The chief objection to a larger truck for this work is that it occupies too much space and is not so easily operated especially when the ground is wet. The place for the large truck is in hauling fruit, after it is packed, from the packing house to the loading station.

We also have a one-ton truck which we tried for hauling empties. It was our first experience in moving empty barrels with trucks as we always considered it as more economical to haul them on wagon racks. This particular equipment was gotten together in somewhat of a hurry but it will carry 110 empty barrels at a trip. We used it exclusively for hauling from cooper shops or storage sheds to central packing houses and had no difficulty in passing larger trucks or other vehicles on the road.

MR. TOWSON: What particular make of truck do you use?

MR. COHILL: We find a Ford truck the most satisfactory.

MR. TOWSON: A one-ton truck?

MR. COHILL: Regular truck. The form A will haul two tons—it is only supposed to hold one ton, but it will haul two. We often make a trip every twenty minutes a distance of two miles with this truck.

MR. MILLER: Do you limit the load?

MR. COHILL: Yes, don't overload.

MR. MILLER: In our section they are apt to overload and overtax them. When you live four or five miles from the station, it is a great temptation to overload, and the trucks don't last.

MR. TOWSON: A Ford motor on a long grade half a mile up hill will take fifty boxes on high.

MR. COHILL: We have a very rough country around Hancock and have found it of advantage to build roads through the orchards. This enables us to handle our apples pretty rapidly. We have hauled fruit to the packing shed, had it graded, packed and loaded in the car at the railroad in one hour and fifteen minutes.

A MEMBER: What crate do you use?

MR. COHILL: Just boxes.

A MEMBER: Perfectly satisfactory?

No. 6.—View of Community Exhibit held at Cavetown, Washington County, 1918.

sized equipment for this work. With it we could haul 1,000 bushel boxes of apples from the orchard to the packing shed in ten hours. The chief objection to a larger truck for this work is that it occupies too much space and is not so easily operated especially when the ground is wet. The place for the large truck is in hauling fruit, after it is packed, from the packing house to the loading station.

We also have a one-ton truck which we tried for hauling empties. It was our first experience in moving empty barrels with trucks as we always considered it as more economical to haul them on wagon racks. This particular equipment was gotten together in somewhat of a hurry but it will carry 110 empty barrels at a trip. We used it exclusively for hauling from cooper shops or storage sheds to central packing houses and had no difficulty in passing larger trucks or other vehicles on the road.

MR. TOWSON: What particular make of truck do you use?

MR. COHILL: We find a Ford truck the most satisfactory.

MR. TOWSON: A one-ton truck?

MR. COHILL: Regular truck. The form A will haul two tons—it is only supposed to hold one ton, but it will haul two. We often make a trip every twenty minutes a distance of two miles with this truck.

MR. MILLER: Do you limit the load?

MR. COHILL: Yes, don't overload.

MR. MILLER: In our section they are apt to overload and overtax them. When you live four or five miles from the station, it is a great temptation to overload, and the trucks don't last.

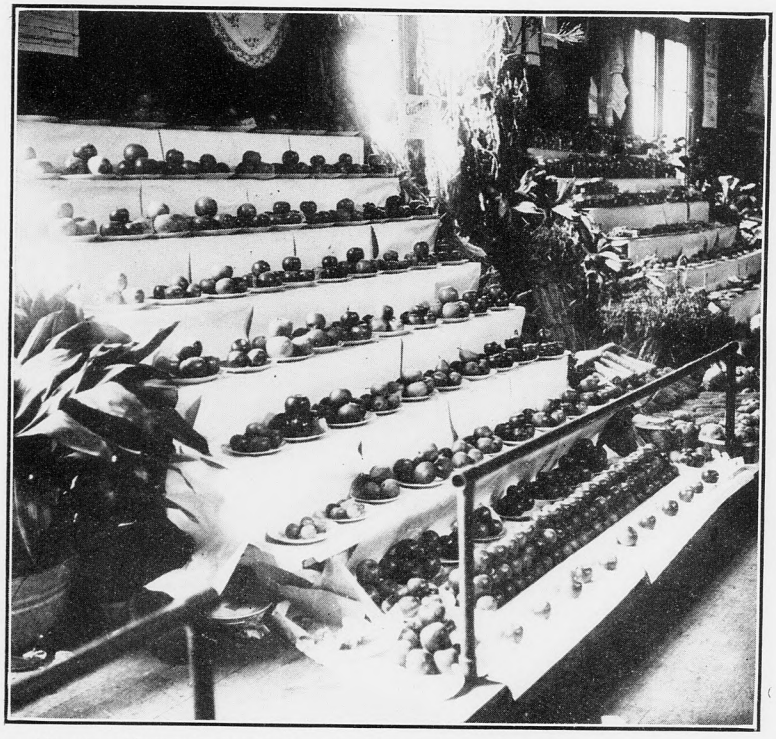
MR. TOWSON: A Ford motor on a long grade half a mile up hill will take fifty boxes on high.

MR. COHILL: We have a very rough country around Hancock and have found it of advantage to build roads through the orchards. This enables us to handle our apples pretty rapidly. We have hauled fruit to the packing shed, had it graded, packed and loaded in the car at the railroad in one hour and fifteen minutes.

A MEMBER: What crate do you use?

MR. COHILL: Just boxes.

A MEMBER: Perfectly satisfactory?



No. 6.—View of Community Exhibit held at Cavetown, Washington County, 1918.

MR. COHILL: Can't say it is. Our boys made quite a number of improvements on it, but there is still room for improvement, it is not perfect by any means.

A MEMBER: Any patent?

MR. COHILL: No.

MR. VINCENT: Being one of the oldest members of this Horticultural Society I know the troubles and trials of the first few years. Our existence sometimes hung almost on a thread, but with the assistance of some few worthy friends, of which I can see some here and there, we have made of this organization one of the best in the State, and I might say in the Union. I regret that we do not have our usual exhibit this year but better times are coming now that we have peace, and if I live to meet you again another year I hope it will be at a show that will surprise the world at large, and show the resources of this grand old State of ours, Maryland, my Maryland.

I wish to offer the following resolution:

WHERAS, Dr. Thomas B. Symons has served as the Secretary-Treasurer of the Maryland Horticultural Society during the years of 1906 and 1907 and from 1910 to the present year;

AND, WHEREAS, During the ten years of his incumbency as Secretary-Treasurer of our Association, Dr. Symons has been a faithful custodian of the records and funds of our organization;

AND, WHEREAS, Through the untiring industry and intelligent leadership of Dr. Symons, the great Maryland Week Show has been developed until it has become an accurate index of Maryland's unlimited agricultural and horticultural resources, ranking first among similar exhibitions throughout the nation and constituting a source of just pride to every citizen of our State;

AND, WHEREAS, To the far-seeing vision of Dr. Symons, in cooperation with the efforts of the leading spirits among the agriculturists and horticulturists of the State, is due the coordination of the activities of the State-wide agricultural and horticultural organizations and their federation in the Maryland Agricultural Society;

AND, WHEREAS, Through these activities of Dr. Symons, the development of the agricultural and horticultural industry of Maryland has been greatly promoted and enhanced.

Be it resolved, By the Maryland Horticultural Society. in session at the Emerson Hotel, Baltimore, Md., Wednesday, December 11th, 1918, that we express to Dr. Symons our hearty thanks for his long years of faithful service in the interest of the Horticulture of Maryland, and our appreciation of the great value of such service to the industry which we represent and to the development of our State;

And be it further resolved, That these resolutions be spread upon the minutes of our Society and that a copy of the same be sent to Dr. Symons.

(Signed) RICHARD VINCENT, JR.,
J. ANDREW COHILL.

It was moved and seconded that the resolution be accepted.

DR. SYMONS: I want to thank the members for this resolution, and to say that I will continue to render as much service as lies within me not only to the Society but to all the agricultural interests of the State.

Mr. Andrew Cohill read the following resolutions; which upon motion duly made and seconded were accepted.

WHEREAS, It is of frequent occurrence that shipments of fruit, either by express or by parcel post are subjected in passage from the point of shipment to their destination to depredations to such an extent that packages of fruit are broken open and much of it removed;

AND, WHEREAS, Complaints made by shippers or consignees to the officials of the express companies or the post office department have not resulted in reducing the losses arising from these sources;

AND, WHEREAS, Such interference with shipments of fruit result, not only loss to the shippers or the consignee, but also in dissatisfaction and delay to all persons concerned, thus placing a heavy handicap upon the efforts of the fruit growers to deal directly with the consumer.

Be it, therefore resolved, By the Maryland Horticultural Society, That we protest to the United States R. R. Admin-

istration and to the United States Post Office Department against the continuance of such conditions;

WHEREAS, The Package Sales Corporation, a corporation designed to control the sale of fruits, baskets and other packages, has so manipulated the situation that they control the output of these packages and fix prices at unreasonable heights without reference to quality of the product, giving every evidence of having a monopoly control of the market and of being a combination in restraint of trade.

Be it resolved, That the Maryland Horticultural Society protest against the existence of such a condition of things and appeal to the Federal authorities for such action as may be necessary in order to correct the evils resulting from this monopoly control of materials necessary to the business of fruit and food production.

Dr. Symons then read the following:

ITHACA, N. Y., September 18, 1918.

Mr. Thomas B. Symons, Secretary,
Maryland State Horticultural Society,
College Park, Md.

DEAR SIR:

It is the desire of the American Pomological Society, in reorganizing and extending its efforts, to develop a close-working connection with the state and district horticultural societies of the United States and Canada. To this end, I solicit the cooperation of the Maryland State Horticultural Society. The Secretary of the American Pomological Society undoubtedly has written your Society, but I desire personally to bring the matter to your attention so that action may be taken at your next meeting, hoping that the cooperation may go into effect for the biennial session of 1919.

Enclosed you will find a copy of the resolution on Society Memberships adopted by the American Pomological Society. I trust it will commend itself to the good-will of your Society.

The American Pomological Society is nearly seventy years old. It has had a useful history, and has maintained a high standard throughout, contributing much to the dignity and standing of American fruit growing. It should represent the entire continent, bringing the pomological interests together, aiding and strengthening all the societies. It is now the time for a coordination of effort, without in any way interfering with the work or affairs of any of the organizations. Will your Society join with the others for a general forward movement?

Sincerely yours,

(Signed) L. H. BAILEY.

Resolution on Society Memberships adopted by the American Pomological Society at its thirty-fifth biennial session, Boston, 1917:

"That there be hereby established a membership in this body to be known as Society Membership, which shall be open to state, provincial and district organizations. The fee for such membership shall be: for a state or provincial society, ten dollars, and for a district society, five dollars, the biennium. This membership carries with it the right and duty to appoint delegates, one for each hundred members, or major fraction thereof, and one delegate-at-large, of the delegating body, to attend and participate in the meetings of this Society; and in addition to these delegates a state or provincial society member shall nominate the state or provincial vice-president, such nomination to be made and submitted in writing, properly attested by the president and secretary of the delegating body, to the Secretary of this organization ten days prior to the date of the biennial meeting next preceding the period for which such nominee is designated to serve. A state or provincial society member shall be entitled to receive six copies of the proceedings of this Society; a district society member shall be entitled to receive three copies of the same publication.

"Delegates from the above society members shall be entitled to all the privileges of other members of this Society; but in the case of the appointment of alternates, no alternate shall have a right to vote except in the event his principal elects to divide his privilege, thereby casting a one-half vote for principal and alternate."

It was moved and adopted that the Society affiliate with the Pomological Society.

PRESIDENT JOHNSTON: Mr. C. E. Temple, State Pathologist will talk to us on "Root Rot in the Orchard."

ROOT ROT OF APPLE TREES.

By C. E. TEMPLE, State Pathologist.

Ladies and Gentlemen, I have been assigned a rather difficult task today. Root rot of apple trees is a very serious disease. Thousands of apple trees for the most part in their early years of bearing, have been lost during the past five years in Maryand alone. In one orchard of five thousand trees approximately five hundred, or ten per cent. of the trees, have been lost during the past two years; in another orchard not so large, about seven per cent. have been lost in three years; and, in almost every orchard between five and fifteen years, at least some trees have been lost from root rot in recent years. These great losses have become alarming; they consist not only in the financial loss of the trees but also

in the weakened morale of the fruit growers themselves. An epidemic of twig and body blight followed by an epidemic of root rot is discouraging almost to the point of giving up. In fact, fruit growers have told me that unless something is done to save the trees, they will be forced to give up orcharding. Since this is a root disease, it is no easy task to devise a practical remedy, the roots being underground, no practical remedy can be applied to them either to cure or to prevent the disease.

In the study of any disease the first question that arises is: What causes the disease? And, when we know the cause of a disease, we often find that we can remove the cause, and thus, effect a practical control. Let us inquire into the causes of apple root rot and see if any headway can be made from this point of attack.

In examining a large number of young orchards, it has been observed that root rot was most prevalent in the orchards that have had the most blight; and, still further, the varieties that are most susceptible to the blight, and were hit hardest by the blight, were also the hardest hit by the root rot. In other words, it would seem that the initial attack on the roots was made by the blight-causing organism—that at first it was a case of root blight just as we have cases of twig blight, body blight, and collar blight. In some cases we have traced the course of the blight down the trunk of the tree into the root system; in other cases, we have traced it from the infections at the tips of sprouts originating underground, down through these sprouts into the roots. In a few cases, we have been unable to determine the primary cause of the root trouble. We have found crown-gall on some of the trees that have had the root rot and it is known that in some cases, at least, crown-gall will cause the death of a tree. Then there are certain parastic fungi that are able to attack the living roots of apple trees and kill them. The fungus root trouble is more prevalent in those orchards set in newly cleared land than in orchards set in old fields, as this organism attacks the roots of a number of our forest trees also. But the apple root rot in Maryland is not more prevalent in orchards set in new land; in fact, the most severe cases have been in orchards which were

set in fields long under cultivation and in a high state of fertility. It is not intended here to infer that none of our trees are killed by crown-gall or by the fungus root rot, for no doubt we do lose some trees each year from these causes. As a matter of fact, we expect to lose trees from various causes, just as we expect to lose each year some human beings from various diseases and accidents in every thickly populated community.

The fact still remains that the principal loss has occurred in those orchards that have gone through an epidemic of blight, and that the course of the blight organism has been traced, in many cases, right into the roots, through sprouts and through the inner bark of the trunk. And, too, we know that the blight organism is always in a vegetative state and that it continues to spread along a branch or a root, so long as there is no check from drought or temperature extremes. There would always be sufficient moisture in the roots to keep the organism alive as there would be no opportunity for a rapid drying of the blighted parts, so there would be nothing to check its spread except the temporary check that might possibly come on account of the winter temperature. Applying this fact to a blight infection in the root system of a tree, we can see that the infection would spread from the primary point of attack to other roots, and then to others, until the whole root system would be involved, even though it might require years to actually kill the tree. After the blight organism enters the root system, it often works its way around the roots, in such a way that the roots are girdled. This girdle of blighted bark prevents the food made in the leaves from reaching the roots, just as in the case of collar blight so common in Grimes. The result is, all of those roots that are girdled, are eventually starved to death. The food made in the leaves goes down to the roots through the inner bark but the water taken in by the roots goes up to the leaves through the wood. This explains why the foliage will remain alive for weeks and sometimes for a whole season after the trunk has been girdled. All have probably noticed that a tree in the forest girdled by the woodman in summer does not die immediately. It is the lingering death of root starvation that finally kills the tree.

This same principle is involved in collar blight which encircles the trunk near the ground and also in those roots that are girdled by the blight. Two kinds of food are required by plants, that taken from the fertility or the soil and that made by the plants themselves mostly in their leaves. The roots must have the food from the leaves, and, if this supply be cut off by destroying its natural channels in the inner bark, there is no alternative but death for the root or roots thus cut off from their food supply.

But the blight does not rot, it simply kills its victim by working its way through and along the inner bark and the outer woody portions of the parts attacked, and the subject in hand is root rot. Let us explain the relation between root blight and root rot. The ordinary organisms of decay, that are so prevalent in all soils, attack the dead bark and then the dead wood and gradually disintergrate them, that is, rot them. In almost all cases observed, the decay began on one side of the tree and this could also be determined by the symptoms present in the foliage. The side of the tree on which the infection occurred would have pale yellow foliage and that side of the tree often dies before the other side, showing that the blight worked from the roots on one side around to the roots on the other side, thus including the whole root system.

Apple root rot here in Maryland is only the aftermath to root blight and it will be controlled only when we control the blight. As blight comes in waves gradually increasing from year to year and then slowly decreasing, we shall probably find that the same will be true of root rot. We have also noticed that the root rot trails after the blight, that is, it shows up two or three years after the blight was at its height. The only thing that can be suggested in the way of controlling the root blight is to keep all sprouts from the roots destroyed. This will not eliminate it, but it will greatly reduce the amount of root blight. There will be a certain amount of root blight caused by the organism going down to the roots through the inner bark of the trunk. This can hardly be prevented although there would be less of this body blight, if the tender water sprouts were plucked from

the trunk and the larger branches two or three times during the summer.

In conclusion, we have found that it is root blight and not root rot that is killing our apple trees; that the root rot is only the natural consequence of the killing of the roots; that blight comes in waves, increasing for a time and then decreasing; that root blight and decay follow twig and body blight; and that the control of the whole trouble has not been worked out to a satisfactory practical working practice but that some prevention may be obtained by keeping the sprouts removed from the roots, trunk and the lower parts of the larger branches during those seasons when the twig blight is prevalent.

REPORT OF THE STATE ENTOMOLOGIST.

By E. N. Cory.

Collegiate Work.

All work in zoology is organized on the subject-matter basis, that is to say, the regular and short course teaching, experimental work in entomology of the Experiment Station, the regulatory work under the State Horticultural Department and the Extension work under the Extension Service are all correlated under one administrative head, the State Entomologist. This makes possible the close cooperation of all the agencies working under the State College of Agriculture in zoology.

The regular courses in entomology and zoology during the scholastic year of 1917-18 were taken care of by Prof. Pierson and the writer. At present there are five students specializing in entomology and eight taking the new pre-medical course which is now offered by this department. This course meets with the requirements of the Council on Medical Education of the American Medical Association and that of the highest grade medical schools requiring a baccalaureate degree for admission.

One course in War Biology was offered to the students of the S. A. T. C. in conjunction with the Department of Botany and a number of short course lectures were given.

Regulatory Work.

Nursery Inspection. Forty-five nurseries were inspected by the Staff of the State Entomologist in conjunction with the State Pathologist. Their general condition was found to be excellent. Especial attention was directed to the examination of the stock for the presence of *Laspeyresia molesta.* This pest was located in two nurseries. The quarantine against the movement of stock from infested areas to non-infested areas within the State was instituted by a proclamation of the Governor with the view of protecting our non-infested areas from invasion by this pest and to relieve the non-infested areas from the quarantine measures of other States.

The presence or absence of *Laspeyresia molesta* was rather fully determined by the inspectors of the Federal Horticultural Board working in cooperation with the various State Entomologists of all of the peach growing States of the Union.

Imported Stock. A total number of 163,400 plants or 241 cases of imported stock were imported from February, 1918 to February, 1919. The indications are that considerable stock will be received from abroad up to July, 1919, when the Federal quarantine, No. 37, prohibiting the entry of most classes of foreign stock will go into effect.

Extension Work.

Insect Outbreaks. Two notable outbreaks of insects required attention for extended periods and necessitated the holding of many demonstrations and visits to a number of farms in the infested area. The tomato aphis (M. solianifolii) infested Worcester, Somerset, Wicomico, Dorchester, Talbot, Queen Anne and portions of Anne Arundel and Calvert Counties with great severity. In addition the aphis was present and demonstrational work was conducted in Caroline, Kent and Cecil Counties. During this time in addition to the writer, Mr. Travers and Mr. O. K. Courtney from the Department of Agriculture were in the field constantly holding demonstrations, addressing meetings and making personal visits to farmers whose fields were in danger. The fields that were properly sprayed under the direction of the County Agents or the Entomological staff showed decided ad-

vantage over those that were not sprayed. Some fields that were not sprayed scarcely produced a ton to the acre. In other instances the opportune multiplication of parasites and predatory insects saved the plants and crops even though no spraying was done. Growers must not rely upon this source of control, however.

The grasshopper outbreak in Frederick, Carroll, Baltimore and Howard Counties was the worst ever recorded in this State, but probably owing to the fact that the grasshopper (M. femur-rubrum) heretofore had done little or no damage of a serious nature, the County Agents and farmers did not call in the Department of Entomology until most of the damage had been done. The writer and Mr. Courtney conducted a series of demonstrations on poisoning and Mr. Courtney constructed a trap which was demonstrated in Baltimore County with considerable success. Several bags of grasshoppers were collected from the trap. In all thirty-eight demonstrations were conducted principally on the above insects and those included under the heading of dusting. In addition one important demonstration on the control of the woolly aphis was begun at Hancock.

Dusting Demonstrations. Dusting demonstrations were conducted at Tonoloway orchard and at Easton on apples and peaches and at Federalsburg and Greensboro on strawberries to control the strawberry weevil. The results of the apple dusting were quite satisfactory in that they showed a marked reduction in the codling moth and diseases over that found in checks. The peach dusting demonstrations were slightly less effective than the spraying demonstrations at the same place. This is shown, particularly, by the development of brown rot in peaches shipped by express. The dusted fruit developed considerable more brown rot than the sprayed fruit and the unsprayed checks went down in bad shape. The strawberry dusting attracted wide attention and will results in considerable work of this character being done in 1919. The demands exceed the time that we have to put into this kind of work. Strawberries dusted three times with a mixture of 85 per cent. sulphur and 15 per cent. arsenate of lead showed a money value of $163.50 per acre over the checks not treated.

Demonstrations for the Control of the Curculio and the Colding Moth. While it is impossible to separate economically the work in the control of insects from that of plant diseases in orchards, it was with the primary object of controlling insects that Mr. Travers of this department undertook demonstrations at a number of orchards on the Eastern Shore during the past year. It is interesting to note that this work was conducted in large and small orchards with equal success. In a back-yard at Easton, three trees that had previously born no salable or scarcely eatable fruit during their life were sprayed three times with the results, that in addition to having fruit enough for the home, the owner was able to sell approximately $45.00 worth of peaches. Another striking example was that on the orchard of sixteen peach trees and twenty-six apple trees. Four applications were given this orchard with the result that sixty-four baskets of peaches and one hundred and sixty-two baskets of apples were secured with a net profit on the crop of $115.18. In the larger orchards equal success attended Mr. Travers' efforts, culminating in the making of a curculio free crop on 992 trees that showed a net profit of $11,875.83. Of course, the high price of fruit influenced the profits that are given, but the important point still remains that we were able to demonstrate to these growers and those who visited the plots that the curculio and the codling moth together with the peach and apple disease can be controlled, profitably. The following tables show the results of Mr. Travers' work:

RESULTS OF THE DEMONSTRATIONS FOR THE CONTROL OF INSECTS AND DISEASES OF THE PEACH.

	No. Trees.	No. Applications.	Cost.	No. Baskets.	Cash Returns Less Cost of Spraying.
1.....	3	3	$2.06	29	$45.69
2.....	1,500	4	481.50	8,536	9,732.80
3.....	1,500	4	218.62	2,800	2,174.57
4.....	1,450	4	114.74	2,000	1,752.66
5.....	3,000	4	437.24	3.500	4,127.82
6.....	300	4	100.00	435	422.50
7.....	1,000	4	365.17	8,314	11,875.83
	8,753	27	$1,719.33	25,614	$30,131.87

RESULTS OF DEMONSTRATIONS FOR THE CONTROL OF INSECTS AND DISEASES IN WHICH THE FIGURES FOR THE APPLE AND PEACH CROP WERE NOT SEPARATED.

No. Trees.	No. Applications.	Cost.	No. Baskets.	Cash Returns Less Cost of Spraying.
8..... 16	5	$29.82	226	$115.18
9..... 550	3	160.00	912	775.00
566	8	$189.82	1,138	$990.18

Demonstrations in Rat Control. In order to obtain data upon which later campaigns may be based, Mr. C. J. Pierson operating under funds from the Council of Defense and directed by the writer, conducted a campaign of demonstrations in Talbot County in which thirteen demonstrations were made with the result that 425 rats were captured in one month. As high 108 rats were captured on a single farm. At the rate of three dollars per rat, the total amount saved to the farmers of Talbot County was thirteen hundred and seventy-five dollars. Even should we deduct from this amount Mr. Pierson's salary and expenses together with the total cost of the rat traps which still are in good shape and available for use, the net profits to the farmers of Talbot County for this work amounts to at least one thousand dollars. This work should be continued and amplified another year.

Miscellaneous Extension Activities. A total of fifteen meetings in Maryland, Virginia and West Virginia was attended during the year at which seventeen lectures were delivered on a variety of zoological subjects. A large number of these were illustrated. Approximately thirty-eight farms were visited during the calendar year for the purpose of giving individual advice on the insect problems found there. While this number is small, an attempt has been made to reduce the number to a minimum with the view to making the demonstrations answer in so far as possible instead of personal visits.

An effort was made to become familiar with the State's resources in fish, oysters, crabs and terrapin. Through the kindness of Commissioner Killian, facilities were placed at the disposal of Prof. Pierson and the writer to visit the floating hatchery at the mouth of the Susquehanna River. On June 11th to 13th, inclusive, the writer visited, on board the Commission's boat, in company with Mr. Killian, the experiments in oyster transplanting from the head of the Bay to the region around Governor's Run. On the way down an inspection trip was made into Curtis Bay to note the pollution of the waters from factory wastes. On September 17th the writer visited Crisfield and spent the forenoon in visiting the crab houses and shedding boxes and the terrapin farm located there. Considerable first hand and valuable information was obtained on these two industries. Starting on December 6th in company with Messrs. Shaw, Oldenburg and Buckley, the exhibit of the Maryland Agricultural Society was installed at the Fifth Regiment Armory, Baltimore, maintained throughout the week of the 9th and dismantled the following week. This entailed considerable effort not only in the actual installation but in planning and arranging for the exhibits and in all approximately an entire month was devoted to this project.

Publications. During the year numerous articles were prepared for the agricultural press, particularly for the Fruit Grower and the Maryland Farmer and for our own Extension Eervice publications, besides two bulletins, numbers 8 and 14 of the Extension Service. While it is true that No. 8 was dated December, 1917, yet its publication and issuance took place in 1918. This work was in addition to the strictly scientific work published elsewhere.

Experimental Work.

The following projects were undertaken or conducted during the year with the progress as indicated:

The Woolly Aphis. (*Schizoneura lanigera*). The final applications and records were made on the above pest which has been progressing during the past three years. A report will be issued upon the results in the near future. Our preliminary recommendations, that is, for the use of an 8 per cent.

pine tar cresote emulsion twice a year, seems to have been well founded and it is likely that the records will show that this procedure is safe and efficient.

The Corn Root-Aphis. (*Aphis maidi-radicis*). Preliminary studies on the control of the corn root louse followed two lines during the year. Greenhouse work on the effect of pine tar cresote and pine tar cresote emulsion on the germination of corn was carefully conducted by Mr. C. B. Nickels, a fellowship man in this department. Interesting results were obtained which may later have considerable practical value. Field work was undertaken at Perryman at the farm of Mr. Parker Mitchell. At this place tests on sweet corn of the value of mixtures of tobacco dust of different nicotine content together with wood ashes and acid bone were made. So far these results show little advantage in the control of the aphis by this method. Work is now being conducted in greenhouse tests this winter by Dr. Garman and it is likely that further field tests will be undertaken in the growing season of 1919.

Oriental Peach Moth. (*Laspeyresia molesta*). Further experiments in the control of this pest were continued during the growing season of 1918, the results of which are now in press and will be issued shortly as bulletin No. 223 of the Maryland Agricultural Experiment Station. Work on this pest next year will be conducted in the orchard of Mr. A. B. Routzman of Frederick, Md.

The Pallid Mite. (*Tarsonemus Pallidus*). The final phases of the project upon the relationship of this mite to certain geranium diseases are all completed, and will be published in the spring of 1919 as an Experiment Station bulletin.

NOTABLE INSECT RECORDS.

1. The Potato Aphis, M. solanifolii Ashun.
2. The Corn Root-Aphis, A. maidi-radicis Forbes.
3. The Turnip Louse, A. pseudobrassicae Davis.
4. The Cabbage Aphis, A. brassicae Linn.
5. The San Jose Scale, A. perniciosus Comst.
6. The Apple Red Bug, Lygidea mendax Reut.

7. The Red-legged Grasshopper, Melanoplus femur-rubrum Deg.

8. The Oriental Peach Moth, Laspeyresia molesta Busck.

9. The Imported Elm-leaf Beetle, Galerucella luteola Mull.

10. The Flat-head Apple Tree Borer, Chrysobothris femorata Fabr.

11. The Potato Stalk Borer, Trichobaris trinotata Say.

12. The Strawberry Weevil, Anthonomus signatus Say.

13. The Wheat Stem Sawfly, Cephus sp. probably cinctus.

14. The Pavement Ant, Tetramorium caespitum Linn.

REPORT

OF THE

MARYLAND STATE DAIRYMEN'S ASSOCIATION

FRIDAY, DECEMBER 13th, 1918

PRESIDENT D. G. HARRY: This is the thirteenth annual meeting of the Maryland State Dairymen's Association. During the past year many important questions have come up, and at our last August meeting we adopted a plan of organization whereby we could cooperate more closely together in placing our product, as well as use the most economical methods of producing them at the lowest possible cost; and also improve the quality of the product, use more sanitary methods and better transportation, and in this way educate the consumer to the value of the dairy products as a whole. We have organized along business methods and in doing so have had the cooperation of the State College, the Bureau of Markets and the State Board of Agriculture, and we have opened an office in Baltimore at 812 Fidelity Building, and will have some one there all the time to look after the marketing end. We want to have checked tests for members in order to guarantee the quality of our product.

We have over 1,000 members, all bona fide producers. We hope in the very near future to greatly increase this membership. We want to take some steps to protect the dairy interest, and there is no way better than through an organization of this kind. Now that the war is over, there is a great demand for dairy products of all kinds, large quantities of condensed milk will be sent abroad. There will be a great demand for good dairy cows to replenish the dairy herds in

Europe, and we must take some steps to protect our dairy business from this extra drain. The only way we can do it is through an organization of this kind and it is the duty of every member in the State to not only join the organization themselves, but to induce their neighboring dairymen to do so also. In this reconstruction period that we hear so much about, it is the duty of everyone to give their best thought and effort to the plan of bringing our country back to the pre-war time of its prosperity. To do this those of us engaged in the dairy business should cooperate with each other through an organization of this kind, and use the most economical way in producing and distributing, and in this way encourage the consumer to use more of the very best food on the market today.

Now we have a very interesting and instructive program today. If we would have more meetings of this kind, where all the dairymen in the State would get together and discuss their problems as they come up, it would be of great benefit to us all.

Mr. Oscar Erf, of the Ohio State University, will now talk to us on "Economics of Milk Production."

ECONOMICS OF MILK PRODUCTION.

OSCAR ERF, of Ohio State University.

Ladies and Gentlemen:

I am very happy to be here and meet my Maryland friends again, for I have a warm spot in my heart for the Maryland dairymen. We have some Ohio boys down here—Mr. Hudson and Mr. McLaughlin in the Extension Service and Mr. Kile with the American Fertilizer Company—and through them we hear much of the good work that you are doing.

Economics of dairying, the topic which has been assigned me, embraces a number of problems which may be solved chiefly through organization. You all realize, I think, that had it not been for organization you would be selling your milk for a much lower price. Last year there was an instance in Wisconsin where one dairyman sold his milk for $1.77 per hundred, while at the same time in the organized districts in

the southern part of the State they were receiving $3.02 per hundred for it. Just last September in Ohio men on one side of the road were sending their milk to Cleveland and receiving $3.60 per hundred; while those on the other side of the road—dairymen who were not organized—were selling their milk in Sandusky, a much smaller city, for $2.40 a hundred.

It is claimed by some people that it is not right for the dairymen to organize; however, we all know that there is no use for anyone to attempt to compete with organized effort. Who is the greatest consumer of your product? It is the laboring man and the laboring men are well organized and have a great influence in running this government. We cannot blame the laboring men for organizing and we are not opposed to organization. Much good results from organization which is based upon right principles. You know there was a time when the contractor underpaid his help and operated a sort of semi-slave system. Organization overcame this and the laboring men found it to be an efficient method of handling their affairs and improving their conditions.

For some time farmers have felt the need of organization, but many organizations in the past have been failures due in most cases to the fact that those starting the organization had selfish interests and did not have in mind the right purpose. Many general farm organizations have failed on account of the fact that they do not reach the real point of interest. In order to have organizations effective there must be different departments of farm organization—the milk producers must be organized, the pork producers and the wheat men, and finally when all these different interests are organized, bring them together into a farm bureau. The farm bureau is proving a very effective organization; however, it is my opinion that it cannot accomplish its full purpose until the various fundamental branches are organized separately.

It is the opinion of many that the proper method of keeping farm costs is to secure the general farm costs, irrespective of the different departments. This is a wrong method to follow. The cost of crop raising should be a separate account and feed should be charged to the cow at the market price, for since that amount can be obtained for it if sold, it is

worth that when fed to the cow. For instance, in some of the Western States hays are produced very cheap. If cows are charged with the cost of producing this hay, then the cost of producing milk would be very low, while it would cost the dairyman who had to buy his feed perhaps twice as much to produce his milk. For this reason it is our contention that a farm should be operated on a departmental system; that the dairy department should pay for itself, the feed should pay for itself, the hogs for themselves and the poultry department for itself and not throw all the receipts into one pot, making a general fund, with no knowledge of which department is making money and which is losing.

We have attempted a number of different methods of obtaining farm costs. In many instances State Food Departments in trying to protect the consumers' interests have not quite understood the problems of the dairymen. I believe they have tried to be fair, but they lacked information regarding the costs of production. They could not understand that the dairymen could not continue to produce milk for any length of time at a loss and I think you will all agree with me that the average dairyman has not been receiving cost of production.

A MEMBER: We have not, with any profit.

MR. ERF: I am not talking of profits. I think very few farmers have received any profits lately. This is one thing that should be taken into consideration. Manufacturing industries demand cost plus 10 per cent. I hope that some day the farmer will get down to that basis.

In Ohio we have been working on a series of cost accounting systems and by the use of these systems we have been able to secure some fairly accurate results. Of course, conditions change constantly. The figures which I shall give you are for eight months as the year's work has not yet been completed. We had 772 cows under our supervision and every item of cost has been carefully watched. These cows averaged 3,704 pounds of milk for the eight months, making a total production of 2,859,488 pounds of milk, containing 3.8 per cent butter fat; $3.20 per hundred was received for this, but the net receipts were only $2.96 a hundred. This allows for

spilling, milk for the calves, farm consumption, etc. Three hundred and nineteen calves, at $13 each, gives a total of $4,147 for calves, and the estimated value of 2,377.76 tons of manure ($3.10 a ton) is $7,371.06, making the total receipts $96,158.90. This represents the income from the 772 cows for eight months.

The average amount of feed consumed by each cow was 1,204 pounds of concentrates, 1,995 pounds of hay, 1,050 pounds stovers, 2,324 pounds of silage, 780 pounds of other succulent roughage and 2.9 acres of pasture. The amount of silage is small on account of the fact that the period covered is from March to October. This makes the total feed cost $68,248.66. The total labor cost for the 772 cows is $31,428.12, making an average labor cost of $40.71 a cow.

A MEMBER: Eighty-eight dollars per cow for feed?

MR. ERF: The average man has taken into consideration only these two items in the cost of production and has not considered other things which enter into the cost. For instance, the items of depreciation and upkeep amount up surprisingly. There is a variation of from 3 per cent to 20 per cent for depreciation and upkeep in the reports which we have received. Our method is to get the inventory of last year and to the present inventory add the renewals and the cows brought into the herd. Our figures on the 772 cows show the past inventory $68,708 and the present inventory $64,025. The renewals amount to $5,280, making a depreciation of 14½ per cent. In most of these cases we have not taken the figures of the owners, but a disinterested person has given us the true situation.

It is rather difficult to estimate the depreciation and upkeep of buildings, but 4 per cent seems to represent this at the present time. You would be surprised to know how rapidly equipment passes out of existence. There is a 19 per cent depreciation on equipment on very well regulated farms. We cannot get away from those figures. The estimates made are very conservative. The value of the cow is placed at $89, the value of the buildings $122 for each cow and the equipment $53 per cow. Many of these dairymen have milking machines, feed grinders and cutters, etc., so that the cost of

equipment amounts to a considerable sum. Everything necessary to have in connection with the housing and care of the cow is taken into consideration in these items. Many people think that pumping equipment, lighting equipment, etc., should not be charged to the cow because they are necessary for other farm operations, but it is no more than right that the cow should pay her proportional share of such expenses. Then, of course, there are taxes and insurance, which are necessary costs.

We have a charge of $6.50 for bedding; $1.20 for salt; $1.20 for condiments; gasoline, 60 cents; kerosene, 20 cents; lubricating oil, 16 cents (this is for the gas engine); soap, 40 cents; ice, $1.80; medicine, $1.10; disinfectants, 92 cents; lime, 16 cents; coal, 10 cents;; milk cans, $1.05; paints, 27 cents; curry combs and brushes, 7 cents; fly repellants, $1.12; towels, 12 cents; cotton and strainer cloth, 39 cents; office supplies, 43 cents. This list covers approximately all of the necessary supplies.

In addition to these items, there is the charge for bull service. There is a great variation in this, but it averages about $9.00. We have separate accounts for the bull and for the young stock. The cow is credited with a calf valued at $13 and when the heifer comes into the herd she comes in at $89. The veterinary services amount to about $2.10 per cow; the Cow Testing Association fees, $2.00, and the traveling expenses, 90 cents. Then we have other association fees and other miscellaneous items, so that the total expense of production for the 772 cows runs about $135,360. When this is compared with the income—$96,000—it does not look like a very profitable proposition, does it? But this represents the real situation the past eight months.

I do not want you to think that I am trying to drive you out of the business. That is not the point. You should keep your cows, but you should get together and get a price for your dairy products which will net you a labor return comparatively equal to industrial labor. It matters not in what work you are engaged, if you are unorganized, if you do not assert your rights, you will simply have to take the short end of the game. There is no use in saying: "Well, this business

does not pay, let's get out of it." You must say: "Let's stay in it and see that it is made to pay." We cannot afford to throw away a large amount of capital which we have invested in dairy operations. This makes 100 pounds of milk cost $4.08 at the farm.

A MEMBER: An average for the year?

MR. ERF: For eight months.

A MEMBER: Taking the summer months?

MR. ERF: I believe that it will cost more during the next four months. I want to leave with you the idea that you must stay in the business and that better times are coming some day if we work together to bring them about. Just keep right on. You cannot afford to give up the ship.

I might mention a few of the items which enter into the labor cost: Milking, 90 hours; washing utensils, milking machines, etc., 14 hours; carrying milk from the cow to the cooler, 7 hours; cooling milk, 16 hours; watering cows, 6½ hours; feeding cows, 13½ hours; hauling milk, 1½ hours; hauling milk, 9 hours; cleaning stables, 9½ hours; bedding, cows, 2 hours; driving cows to and from pasture, 4 hours; repairing fences, 2½ hours; salting cows, ½ hour; disinfecting cows, 6 hours; cleaning water tanks, ½ hour; oiling and attending milking machines, gas engines or motors, pump or other water device, 5.5 hours; attending sick cows, 1.5 hours; whitewashing and painting, 1.5 hours; care of equipment, pails, etc., 6 hours. This makes a total of 201 hours per cow each year for labor. This does not include superintendence which has to deal with the buying and selling of cattle, buying and selling of feed, association work and work of that nature. In order to know the value of your labor you must known the number of hours necessary to accomplish the dairy operations. It may not be the case down here, but in Ohio we have had a great deal of trouble in keeping labor on the farm, because the industrial plants paid much higher wages than farmers were able to pay. We must make arrangements whereby we can pay a man a living wage.

I see no way to handle this except through organization. You will find that the citrus fruit growers followed that method and have been very successful. I was recently told

by a member of the Prune Growers' Association that 76 per cent of the people who are producing prunes are members of that organization and they contend that they have been able to put this on a business basis by reason of that fact. That is probably one of the best organized associations that there is. The raisin growers are also thoroughly organized and are putting their business on the right basis. Some people believe that if the farmers are thoroughly organized they will boost the prices so high that the consumer will not be able to cope with them. There will be legislative bodies to take care of such things, so that the consumer need have no fear of that. The labor organizations will see that you do not take the bit and run away.

In some places they are combating the dairy organizations. In the West the Consumers' League has been organized with the purpose of using as little milk as possible and, of course, it has had its effect. The public must have the right information regarding these things and that is one purpose of organization. After all, the law of supply and demand will regulate the price. I know of no instance in which the law of supply and demand does not finally control the price. The mind has very much to do with the supply and the demand. You can control the situation to a great extent by proper education and this comes principally through advertising. I am not selling advertising space, but I just want to bring your attention for a moment to a few things which advertising has done. Take any commodity—shredded wheat biscuit for instance. You can remember the day when you never heard of shredded wheat biscuit. Advertising has created a demand for these and yet you are paying from $15 to $24 per bushel for your wheat when you buy it in the form of a prepared breakfast food. You buy that when you have plenty of good wheat in your granary. It is advertising that has made you do it. Now you should advertise milk. Did you ever tell the consumer the value of milk as a food? No; you expect him to know that. If you would put big bill-boards right down here on your streets you could soon change the situation. You could soon sell your milk at a profitable price. You must urge the public to buy your

products. There is no question but what advertising pays, but how are you going to advertise? There is only one way. You must all get together, and every dairyman pay a certain amount per gallon. I believe you are paying one-tenth of a cent per gallon here now and you have the right plan. The average producer in Ohio who does not belong to an organization is receiving $1.18 less per hundred for his milk than those who are organized, as nearly as it can be figured. Don't you think you can afford to spend a little money to get together. Get together and get down to a business basis.

Another thing, the farmers should be informed as to their exact situation. They should know the cost of producing their milk and for this purpose cost accounting associations should be organized. There should be a man to go from farm to farm to help in figuring these costs, to make the inventories, etc. I have never seen a case where the farmer's cost of production has been accepted and that is because he has not had a business system of accounting. If you have an organization to stand back of this work, then your figures will be accepted.

One of the most important points in dairy economics is organization and organization on the right basis so that you may receive cost of production with a small profit and create a demand for your product. Of course, we must do our level best to produce milk as cheaply as possible. We must not forget the fact that many producers are not efficient and when an organization figures costs of production, the figures should be based on average cost plus a demand cost, and that demand cost varies. Just at the present time it is about 22 per cent higher than the average cost. We may put it this way: 75 per cent of the dairymen must make money while about 25 per cent are on the other side. Some of the dairymen on the wrong side are working under some disadvantage—poor land, low-priced land, probably putting out milk principally in the spring time when the cows are on pasture and various other things which enter into their problem. You cannot expect the consumer to pay for inefficiency on the part of the dairyman. The dairies that are profitable must have high producing cows. By this I do not mean extremely high rec-

ords, but a high average production. It costs much more to feed and care for a cow that will produce a thousand pounds of fat in a year, and this can only be done by a comparatively small number. In this case the calves bring a very high price. Why should such calves bring high prices? Because by the use of such animals in an average herd the average production may be raised materially. We should have pure bred sires from high producing ancestors at the head of every herd and thus increase the production of the heifers. Then you should test your cows and know what each one is doing. The Bull Associations help out in the problem of breeding and the Cow Testing Associations in the work of testing.

I wish I might have an opportunity to talk to you more along this line, but I have had time to simply give you a few fundamentals in dairy economics. The whole thing is based upon organization, education and efficiency. You can accomplish wonders if you get together and work this thing out on a business basis.

COST OF MILK PRODUCTION—March to October, 1918.

772 Cows—Yearly production, 5,556 pounds.

O. Erf, Dairy Dept., Ohio State University.

Earnings.

ACTUAL SALES.

Milk, 2,859,488 lbs.; 3.8% fat; at $3.20 cwt. ($2.96 net)	$84,640.84	
Calves, 319; at $13	4,147.00	
Total actual sales		$88,787.84

OTHER RETURNS—(Values Estimated).

Manure, 2,377.76 tons; at $3.10	7,371.06
Total Earnings	$96,158.90

Milk production per cow	663.704 pounds
Total earnings per cow—8 months	$124.56
Total earnings per cow—1 year	186.84
Calf value per cow	5.37
Manure value per cow	9.55

FEED—EIGHT MONTHS.

	Lbs. per Cow.	*Price per Ton.*	*Amount per Cow.*	*Lbs. 772 Cows.*	*Amount 772 Cows.*
Concentrates	1,204	$52	$31.304	929,488	$24,166.69
Dry Roughage:					
Hay	1,995	25	24.937	1,540,140	19,251.36
Stovers	1,050	9	4.725	810,600	3,647.70
Succulent Roughage:					
Silage	2,324	7	8.134	1,794,128	6,279.45
Other Succulent Roughage	780	6	2.34	602,160	1,806.48
Pasture—Acres	2.9	5.85	16.965	2,238.8 acres	13,096.98

Total Cost Feed 772 Cows—8 Months.....$68,248.66
Total Cost Feed 1 Cow —8 Months..... 88.405

LABOR—EIGHT MONTHS.

Hours Labor—772 Cows 106,536
Hours Labor—Per Cow 138
Hours Labor—Per Cow per Year (Estimated)..... 195
Superintendence and Clerical..... 12
Rate per Hour—29.5 cents.

Total Labor Cost 772 Cows—8 months....$31,428.12
Total Labor Cost per Cow—8 months..... 40.71

OTHER EXPENSES—DEPRECIATION AND UPKEEP.

	Past Inventory Value.	Present Inventory Value.	Renewals.	Present Value Old Material.	Per Cent. Depreciation.
Cows	$68,708	$64,025	$5,280	$58,745	14.5
Buildings and Fences	94,184	99,637	9,221	90,416	4
Equipment	40,916	46,512	13,370	33,142	19

	Investment per Cow.	Depreciation per Cow—Year.	Depreciation 772 Cows—Year.	Depreciation 772 Cows—8 Months.
Cows	$ 89	$12.905	$9,962.66	$6,641.00
Buildings and Fences	122	4.88	3,767.36	2,511.57
Equipment	53	10.07	7,774.04	5,183.00

	Investment Per Cow.	Rate.	Amount 1 Cow 1 Year.	Amount 772 Cows 1 Year.	Amount 772 Cows 8 Months.
Insurance—					
Cows	$ 89	.....	.....	.....	.....
Buildings and Fences	122	2.2	$2.684	$2,072.05	$1,381.37
Equipment	53	2.2	1.166	900.15	600.10
Taxes—					
Cows	$ 89	1.4	$1.246	$961.91	$641.27
Buildings and Fences	122	2.2	2.684	2,072.05	1,381.37
Equipment	53	2.1	1.13	872.36	581.57
Depreciation and Upkeep			$27.855	$21,504.06	$14,336.04
Insurance			3.85	2,972.20	1,981.47
Taxes			5.06	3,906.32	2,604.21
Total			$36.765	$28,382.58	$18,921.72

SUPPLIES.

	1 *Cow for* 1 *Year.*	772 *Cows* 1 *Year* (*Estimated*).	772 *Cows* 8 *Months* (*Actual*).
Bedding (Straw, Shavings or Corn Stover)	$6.50	$5,018.00	$3,345.33
Salt	1.20	926.40	617.60
Condiments	1.20	926.40	617.60
Gasoline	.60	463.20	308.80
Kerosene	.20	154.40	102.93
Lubricating Oil	.16	123.52	82.35
Soap	.40	308.80	205.87
Ice	1.80	1,389.60	926.40
Medicines	1.10	849.20	566.13
Disinfectants	.92	710.24	473.49
Lime	.16	123.52	82.35
Coal	.10	77.20	51.47
Milk Cans	1.05	810.60	540.40
Paints	.27	208.44	138.96
Curry Combs and Brushes	.07	54.04	36.02
Fly Repellants	1,12	864.64	576.43
Towels	.12	92.64	61.76
Cotton and Strainer Cloths	.39	301.08	200.72
Office Supplies	.43	331.96	221.31
General Service:			
Bull Service	9.00	6,948.00	4,632.00
Veterinary Services	2.10	1,621.20	1,080.80
Laundry and Mending	.22	169.84	113.22
Cow Testing Association Fees	2.00	1,544.00	1,029.34

Traveling Expenses	.90	694.80	463.20
Advertising—1c. per cwt...	.56	432.32	288.21
Miscellaneous	.....	.....	.....
Total Other Expenses...	$69.335	$53,526.62	$35,684.41
(Eight Months).....	46.223		
TOTAL EXPENSES (8 Mo.)	175.338	.....	135,361.19

Rent or Interest upon Investment:

Buildings—$122, at 6%....	$7.32	$5,651.04	$3,767.36
Cows—$89, at 6%.....	5.34	4,122.48	2,748.32
Business Risk—10%; Value of Cow	8.90	6,870.80	4,580.53
(One Year).....	$21.56		
(Eight Months).....	14.37		
TOTAL COST PRODUCTION PER Cow	$189.71		
CREDITS	14.92		
	$174.79		

COST PER HUNDRED POUNDS MILK—$4.72.

	1 *Cow* 8 *Months.*	772 *Cows* 8 *Months.*
Feed	$88.405	68,248.66
Labor	40.71	31,428.12
Other Expenses, 8 months.....	46.223	35,684.41
TOTAL EXPENSES	$175.338	$135,361.19

Credits:		
Calf	$5.37	
Manure	9.55	
		$14.92
3,704 Lbs. Milk.....		$160.42
100 Lbs. Milk.....		4.33

Rent or Interest upon Investment:

Buildings, $122; at 6%.....	$7.32	$5,651.04	$3,767.36
Cows, $89; at 6%.....	5.34	4,122.48	2,748.32
Business Risk of Cow, 10% Value; $89, at 10%.....	8.90	6,870.80	4,580.53
	$21.56		
Eight Months	14.37		
		$160.42	
		14.37	
3,704 Pounds Milk.....		$174.79	
100 Pounds Milk.....		4.72	

MR. HARRY: We will now hear from Dr. Woods, of the State College.

VALUE OF COOPERATION.

By DR. A. F. WOODS, President Maryland State College.

DR. WOODS: I shall take only a very few minutes. I was much interested in Dr. Erf's figures and in his economics. Dairy economics are not different from any other kind of economics, if they are based on real facts. The principles that underlie any business are the same. All that we need to do in dairying and in agriculture is to apply them. That is what the farmers are beginning to do in all branches of agriculture. They have seen that organization and cooperation and application of business and economic principles to their business is the only salvation of it. The people of the country as a whole have seen that unless these principles are applied to agriculture and business of agriculture, that nothing else can succeed. Great captains of industry, like the late James J. Hill, and other leaders in finance, transportation, bank and in every field, you will find really and honestly interested in agriculture, not entirely unselfishly because they have realized that the hope of their business for the future depends absolutely upon the success of agriculture. Now, strange to say, those men have advocated cooperation instead of competition. We have said that competition was the life of trade, and have put it into our laws to make people compete. We made the railroads compete until we had to really use them. Then we had to take them over and stop that competition. Agriculture is supposed to be a competitive business—the producer competes with the distributor. The distributor tries to get the products as cheap as he can from the producer. They are scrapping all the time to maintain their economic balance. It has been supposed that it is to the interest of the public to maintain this scrap. And now far-seeing members of the consuming public and the distributing public have awakened to the fact that this fight is the worst thing in the world for them. It reduces the quantity and quality of the product and forces up prices. This is not good

for the public. The public has to take what it can get and pay what the scarcity of the product requires. The consuming public should require those engaged in the production and distribution of products to get together and cut out waste. I hope that as soon as this organization gets strong, as soon as it gets control of the production of the product, it will advocate the getting together of the distributor of the product, with the producers of the product in such a way that we can see that every economical method of production and distribution is put into operation. We can then distribute good milk in sufficient quantity to the consuming public at the lowest possible cost, consistent with a good product, produced at the cost of production and distribution and the cost of distribution, plus a reasonable profit in both cases. This is necessary for the maintenance of the business. The public is beginning to realize the truth of that statement.

These figures that have been secured in Ohio averaged for the year about forty cents a gallon. That was our average during the high-cost week last winter. It is evident, however, that we were not too high.

We now have a producers' organization that has been developed after the most careful cooperative study by the producers, the State College and the National Department of Agriculture. We have in the Clayton Amendment to the Anti-Trust Act legislation that is destined to protect the public. Our new organization meets all the conditions of that Act. A sufficient number of the better producers have gone into this organization so that they represent more than half of the product that goes into this market. The membership is increasing every day. Additional studies have been made of the cost of production which enable us to determine it with reasonable accuracy. Some who have not joined the association say, "You have been able to make the price, now you are able to say that the cost plus a reasonable profit is forty-two cents, and the distributors have to pay forty-two cents. The Food Administration has to permit forty-two cents because they know it is fair, and what is the use of our paying any more attention to it? We are getting the forty-two cents. What more have we to do about it? Why should

we join the association?'' I have been surprised to hear this from quite a number of producers. This is a selfish attitude to take. I am not referring to you men, you are members of this Association, as I said yesterday in the meeting of the Agricultural Society, the real people we would like to reach are not members of this Association; they do not attend the meetings, they are the sinners, they are outside and need to be saved, but what I am saying to you is the kind of doctrine you must carry to them, because a few people cannot do all the work. We can only determine on what is to be done, and then preach it everywhere, and see that these people get it until they are converted. I say to the man who does not join, that he is a selfish man if he is going to take advantage of what other people are working for and paying to bring to him, without doing his part. If he does not help, he is a parasite and needs to be driven out of the business. You cannot go at these people with soft gloves. You must tell them the truth in a very decided way. I am glad that when people stop to think they say, ''Of course, I never thought of it in that way before. I thought forty-two cents was the market price, and if we are going to get that what is the use of my doing anything?'' They don't stop to think how that forty-two cents was arrived at. If it had not been for this Association the price would be thirty-eight cents. That is a demonstration of the fact that if the producer of a product is going to leave it to somebody else to advertise his product and sell it, he is going to get any price that the other party wants to pay for it. On the contrary, if you can say, ''This has cost me so much to produce it, and I am entitled to so much profit, and I can sell it for that and no less,'' that is what you are going to get if your product is wanted. We are getting that price today because we do control the product. One more thing, you must convince the consumer that you are not doing this for the sole purpose of controlling the price, but that you are doing it so that you can get a fair return for your labor, so that you can stay in the business and pass on to your son, a business just as sound from an economic standpoint, just as sure of return as the making of ammunition, or selling of transportation, or selling

of any other commodity. Until you can do that, agriculture will never be on a basis where your sons will want to return to it, after they have learned the facts. Just as soon as we get it where there will be a sure and safe and profitable return from every standpoint, just at that moment the boys and girls will stop leaving the farms and the tide will turn the other way. There is no better business in the world than a rightly conducted, profitable farm.

One other statement I want to make. It is absolutely essential to the success of any business that it be organized. Organization is absolutely fundamental to progress. If you take organization out of the world, you would have nothing of any value left. You must have organization, and after you have it, you must keep it. If it amounts to anything, those in it must stay in it. Difficulties and misunderstandings will arise if it is going to remain an organized agency for good. If you don't get what you want, don't drop out. Stay in and work to get what you think is right. See that you get it, work for it, get the elements out that are not cooperating, eliminate these from your organization until you get the thing down so that it becomes an efficient agency to promote the production and marketing of the best possible product at the lowest remunerative price. One difference between dead matter and living matter is that dead matter never reproduces, and living matters always reproduces. An organization is dead that does not reproduce. If you don't get new members and get them to stay in, your organization will soon be dead. A live organization is one that is growing and keeps up with the times. You must grow to remain alive. I emphasize "*you.*" Your president can't do it, or your Executive Committee can't do it. I have never in my life seen men work more faithfully than your committee. They have taken all the trouble, all the time necessary—whenever a call comes they are there and working. That is all right, that is what you put them there for, but if every member of this new organization does not do the same thing in the field in which he is located, if he does not go out and get his neighbor in, then he will not be a good member. You must work for this organization. Everyone that you come in contact with you must imbue with the ideals of

No. 7.—View of Home Economics Exhibit at Frederick Community Show.

this organization; if he is not interested, stay with him until he gets interested.

I have stated, in a very blunt way, certain facts that are fundamental to the success of this organization. If you will put them into operation nothing can stop you or prevent your success.

MR. HARRY: We certainly have had two splendid addresses. They both brought out the value of organization. We want a better public education of the consumer to the fact that we are doing it to keep the dairy business alive, to have an adequate supply. Dr. Woods spoke of the advantage of organization, and how everyone should help to make that organization grow. One of our members has brought in four contracts. We want every member—we have got one thousand members—if every member will bring in four contracts we will have four thousand new members, more than we have distributors in Baltimore, and then we can take in new territory in Hagerstown and Cumberland and other sections, and have a real live organization. I want everyone to do that. I hope that there is not anyone here today who is not a member. I am going to ask if there is anyone present who is not a member to hold up his hands.

A MEMBER: Suppose you ask the members to hold up their hands. [All members held up hands.]

MR. HARRY: We will now have the report of the Treasurer.

REPORT OF W. A. WHEELER, TREASURER, MARYLAND STATE DAIRYMEN'S ASSOCIATION.

RECEIPTS.

1917			
Dec. 20	Balance on hand		$478.49
1918			
Apr. 5	Cash from Mr. Ruffner (membership fees)		59.00
			$537.49

DISBURSEMENTS.

1917			
Dec. 26	Paid J. L. McCormick (printing, postals, etc.)	$4.50	
1918			
Jan. 25	" R. S. Snader (printing)	53.00	
" 26	" R. W. Balderson (traveling expenses)	3.90	
" 26	" John A. McSparren (traveling expenses)	13.19	

No. 7.—View of Home Economics Exhibit at Frederick Community Show.

this organization; if he is not interested, stay with him until he gets interested.

I have stated, in a very blunt way, certain facts that are fundamental to the success of this organization. If you will put them into operation nothing can stop you or prevent your success.

MR. HARRY: We certainly have had two splendid addresses. They both brought out the value of organization. We want a better public education of the consumer to the fact that we are doing it to keep the dairy business alive, to have an adequate supply. Dr. Woods spoke of the advantage of organization, and how everyone should help to make that organization grow. One of our members has brought in four contracts. We want every member—we have got one thousand members—if every member will bring in four contracts we will have four thousand new members, more than we have distributors in Baltimore, and then we can take in new territory in Hagerstown and Cumberland and other sections, and have a real live organization. I want everyone to do that. I hope that there is not anyone here today who is not a member. I am going to ask if there is anyone present who is not a member to hold up his hands.

A MEMBER: Suppose you ask the members to hold up their hands. [All members held up hands.]

MR. HARRY: We will now have the report of the Treasurer.

REPORT OF W. A. WHEELER, TREASURER, MARYLAND STATE DAIRYMEN'S ASSOCIATION.

RECEIPTS.

1917			
Dec.	20	Balance on hand	$478.49
1918			
Apr.	5	Cash from Mr. Ruffner (membership fees)	59.00
			$537.49

DISBURSEMENTS.

1917			
Dec.	26	Paid J. L. McCormick (printing, postals, etc.)	$4.50
1918			
Jan.	25	" R. S. Snader (printing)	53.00
"	26	" R. W. Balderson (traveling expenses)	3.90
"	26	" John A. McSparren (traveling expenses)	13.19

Feb.	4	"	Chas. C. Fulton & Co. (stamps, cards, etc., Carroll Co.)	6.30	
"	4	"	T. E. McLaughlin (stamps and envelopes)	7.40	
"	4	"	W. W. Hopkins (stamps and envelopes)	8.20	
Apr.	5	"	Wm. A. Jones (rent Odd Fellows' Hall)	10.00	
July	10	"	I. W. Heaps (traveling expenses, etc.)	48.50	
"	10	"	D. G. Harry (traveling expenses, etc.)	42.00	
"	10	"	Mary E. Terry (stenography and paper)	4.40	
"	22	"	J. R. Risdon (printing, Carroll Co.)	8.21	
Aug.	6	"	Alice J. Holzinger (hall rent)	9.00	
"	6	"	John W. Smith (printing cards for various meetings)	79.85	
"	6	"	A. S. Abel & Co. (advertising meetings)	4.80	
"	6	"	John W. McGill, Jr. (printing cards, etc.)	3.08	
"	6	"	R. W. Balderson (expenses)	4.50	
"	23	"	L. W. Smith (printing, etc.)	8.00	
"	23	"	P. R. Baile (post-cards and printing)	46.40	
"	23	"	A. Hoen & Co. (printing, envelopes and paper)	17.25	
"	23	"	King Bros. (printing notice of meeting)	8.25	
"	23	"	James B. George (postage, etc.)	7.00	
"	27	"	Wm. A. Jones (hall rent, Odd Fellows)	10.00	
Oct.	7	"	J. L. McCormick (postage, etc.)	11.00	
"	10	"	I. W. Heaps (expenses)	34.50	
"	10	"	D. G. Harry (expenses)	35.11	
"	10	"	Walter Garrett (hall rent, Carroll Co.)	5.18	
"	10	"	W. A. Wheeler, treasurer (sundry expenses, 1915 and 1916)	38.78	
"	10	"	I. W. Heaps, treas., balance on hand	5.19	
					$537.49

MR. HARRY: We will now have the report of Mr. I. W. Heaps.

MR. HEAPS: I have not got much of a report. Mr. George has turned over $936 of membership fees, and I received from W. A. White, former treasurer, $5.19. Since December 1st, I have received $31 in membership fees, and that makes a total of $972.19. There have been no disbursements since I have been in office. I am not able to tell you what our bills are at this time.

The meeting then adjourned.

AFTERNOON SESSION

The afternoon session of the State Dairymen's Association was called to order by President Harry at two o'clock.

PRESIDENT HARRY: We will first hear from Mr. Gamble, professor in Dairy Husbandry, Maryland State College, on "The Future of Dairying in Maryland."

THE FUTURE OF DAIRYING IN MARYLAND.

JAMES A. GAMBLE, Maryland State College.

It has been said without fear of contradiction that dairymen give more and ask less than any other class of human beings. As one of our leading journals recently put it, "A dairyman is a capitalist who works eight hours twice each day; who sells his product for what the other fellow wishes to pay; who buys from the other fellow at whatever price charged; who gives his boy to the city for its upbuilding; who has been caricatured on the stage and yet can come nearer to taking hold of any business and making it go than any other American alive."

The above described dairyman was he who waited for some outside force to come in and improve dairy conditions for him, expecting that somehow better dairy conditions would "just happen." The dairyman of yesterday has since come to realize that improvement in dairy conditions must come from within if at all; that if we are to better dairy conditions, producers themselves are the only persons in the world sufficiently interested in the future of the dairy business to bring about such results. With this realization has come an awakening. Producers have organized, asked for and are receiving more remunerative returns for the capital invested, and the long hours and hard work put into the care of cows and production of market milk.

In Maryland we have about 46,000 farms. On two-thirds of these some cattle are kept, but only on part of the latter do we find sufficient dairying to speak of them as strictly dairy farms. We have short, mild winters and long growing seasons, and some of the most productive land on the Atlantic seaboard. We can grow splendid silo corn; our soil for the most part is suitable for the growing of alfalfa and other legumes so valuable in the feeding of dairy cows. Our transportation facilities are good and our markets for milk are without question among the best in the world. In short, we have everything which has made other States dairy centers.

The markets of the world at present are calling for dairy products. The question of the moment is, do we want a larger

share, a larger part in the dairy business of the country, and if so, how can we obtain the same? How can the interest in dairying in Maryland be increased? The answer to this may be found in a study of the evolutions which have taken place in the famous dairy States. In other words, if Maryland is to become a great dairy State she will become so by much the same methods as were followed in the other States. The State of Vermont is a splendid example of dairy development. She has about the same area in farms as Maryland, is much less accessible to markets, has a severe winter and a short growing season; is a rocky, hilly State, yet according to the last census, produced and sold twelve million dollars worth of dairy products each year as against our six million. How was this accomplished? By increasing the interest in dairying, the kind of cows kept and the quality of the product produced. She has a much larger cow population, and in 1909 each of these produced 25 per cent more milk than did the dairy cows of Maryland. This increased production from the larger number of dairy cows resulted in the additional six million dollars returned to the dairymen of that State. The better cows were not a happenstance, but were the result of the interest taken in dairying. This interest has continued to increase, for in 1917 there were 43 cow testing associations in Vermont.

A survey of present world conditions leads one to believe that there is bound to be a continued demand for good dairy cows and still greater amounts of dairy products. The State of Maryland because of climatic conditions, fertility of soil, transportation and nearness to markets is splendidly situated to contribute its portion of high grade cattle and high grade dairy products. I believe that in the formation of the Maryland Dairymen's Association the first step toward a wonderful dairy future for Maryland has been taken. Its continued success means that Maryland dairymen are assured of the actual cost of production plus a reasonable profit. This makes dairying a sound financial undertaking and furnishes a secure basis upon which future success may be built. To increase production we must head our herds with pure bred bulls from high producing dams. We need not

go out of the State for these sires for we have within our borders several excellent herds of the different dairy breeds upon which to draw for bull calves. A scrub bull will get scrub stock so long as we keep him at the head of our herds. A pure bred sire from high producing dams will likewise transmit these qualities to his offspring. "Like produces like." Weighing feed fed and milk produced and feeding each cow according to her production should also be practiced. We must grow more legumes and a larger share of the concentrates fed our herds. We must take fullest advantage of our splendid markets and furnish them the highest grade of dairy products obtainable and through judicious advertising increase the consumption of the same.

Now that the Maryland Dairymen's Association has been organized, let us not cease to press forward. The present is not *the end* but *the beginning*. Inasmuch as the past, present and future conditions in dairying have been, are, and will be controlled by the dairymen of the State, it is a safe prediction that the only force in the world which can make Maryland one of the greatest dairy States are the dairymen on Maryland's 46,000 farms.

This thought I will leave with you. If we but take the fullest advantage of our climatic conditions, fertile soil and markets and will produec the highest grade of dairy products and of dairy cows, our future is made, for as Emerson has said, "If a man write a better book, or make a better mouse trap than his neighbor, though he live in the wilderness the world will make a beaten pathway to his door."

PRESIDENT HARRY: We will now hear from Mr. Richard Pattee, manager of the New England Producers' Association on, "The Benefits of Organization in the Marketing of Milk."

THE BENEFITS OF ORGANIZATION IN THE MARKETING OF MILK.

By RICHARD PATTEE,
Manager New England Producers' Association.

Mr. Chairman, Ladies and Gentlemen:

I assure you in the first place that I am most delighted to be here. I ought to be. You would apprecite how glad I am

to be here if you had been with me. To get here I left Boston Monday and was in Portland Monday night. I went from there to Rochester, N. H. I stayed there Tuesday. I was in Springfield, Mass., Wednesday night, and in New York last night, and I have to go back tonight. So you can see my part of the benefit of the organization is the chance to roll around the country and study time cards and miss train connections and eat in all kinds of places and sleep the same. I was mighty glad when I got here. The train got in on time, but I have never been in your city before. I had something to eat, and that took me quite a little time, and then a parade held me up. I saw some clothing in a window, and I rushed in and a good-looking girl asked me what I wanted and I said "I want to buy a shirt." She says "Yes," and she reached down under the counter and pulled out a kind of very fancy looking article with little ribbons run through it and lace on the edges of it, and I beat it (Laughter.) I did not have time after rolling around to get a shave, and just merely got here in time to take my part on the program. I am awfully sorry that I have missed your previous session. I anticipate that I would have gotten a great deal out of that.

I congratulate you on the keen interest here, and upon what, from the suggestion of the chairman, you have been talking about all day.

Now, in the first place, let me say that two years ago up in New England we had a very hazy, vague sort of an organization. For over thirty years there have been more or less movements to organize a milk products association supplying the Boston market. That organization passed through various stages. It appeared and disappeared several times until about two years ago some of us more or less connected with the previous organization conceived the idea of organizing a New England organization to deal with the New England problem. We proceeded to do that to the best of our ability, and today we have not what we should have, but an organization of upwards of 15,000 men supplying these different cities in New England, and in the year 1918, the prices we have gotten for market milk in New England is approximately $12,000,000. We claim, and I think we can more

LIBRARY, UNIVERSITY OF MARYLAND

than justify the claim—that at least one-fourth of this increase may be credited to the fact that the men were organized. They have at least increased the milk receipts to dairymen in New England markets, three million dollars, during the last year. It has cost the dairymen approximately $30,000 to do this. I believe that our experience absolutely justifies all of the work and all of the expense that has been involved in providing an organization.

I don't know just what has preceded me, and so I am in the delightful position of the men who come to New England to talk milk. They usually start off by telling us that they are awfully good men to settle our milk problem because being strangers they know absolutely nothing about either side of the controversy. So I am not handicapped with any knowledge of what has preceded me, and I shall, with your permission, go ahead just as I would talk if I were in New England.

LIBRARY, UNIVERSITY OF MARYLAND

In the first place, we say to our people up there—there are two ways in which the dairy business may be made to pay more money and have better business. In the first place we may sell our products for more, or on the other hand we may make them for less. We may increase our net income by increasing the returns for the gross sale, or by decreasing the cost of making them. We are pretty well supplied with agences to teach us how to make the same amount of products for less money or more products for the same money up home. I don't know how you are here. The trouble with us has been that we did not know how to handle our stuff after we had produced it. It was very little to some of us up there to undertake to cut down the cost to make two blades of grass grow where only one had grown for the sake of giving the other fellow the extra blade. Our effort has been to get together to market our stuff, so that it would bring back to us a larger part of what was paid for it.

I was in a little town in New Hampshire, and in that town the local character, we almost always have one or more in every town—I don't know whether you have them outside of New England. This man was more than an ordinary man. His military title was "Colonel," he had served on the Governor's staff (Laughter), and he was quite a politician. For

some years he carried that community and whatever he said went. He used to come to my place almost every morning, get out the morning paper, and stop and read it. One morning I turned around to him and I said: "If you were a young man twenty-one years of age, of ordinary ability and good health, who wants to make money, where would you go?" The old fellow dropped his head, screwed up his eyes—he had one cocked eye, and the other was crossed, so I never knew where he was looking—"Want to make money he asked?" "Hell, go where money is." That was not such awfully bad advice, was it? Gentlemen, if you want to make money, go where money is. There are a few people up in New England, who can make money farming.

I don't know what has been the experience in the market milk business in Maryland, but if your experience is anything like ours, it would be that in the last twenty years the supply of market milk for your large metropolitan consuming cities has been spreading. The centre of the milk supply of the Boston market has been moving away at the rate of two to five miles a year. The centre of the suply of milk for Boston was 220 to 240 miles distant up to two years ago, the dairy population of the New England States was spreading at the rate of about twenty thousand head a year. Marketing milk in the territory of Southern New England grew to quite a business, and became concentrated in the hands of large dealers. The old territory was milked dry, and as the dealers required new territory they took it and milked that dry and went on. That has been the history of the milk supply for our New England cities. There was no money made in making milk for market use in that section of the country. At the same time during this period great corporations developed. One of these began about forty years ago as a family concern. One man who had some cows, collected his own milk and some of his neighbors and took it to Boston and there sold it. From this small beginning developed a business so large that it was thought better to incorporate, and they incorporated under the laws of New Hampshire with a $40,000 capital. About fifteen years ago the same concern organized a stock company in the State of Maine, with a capital of $1,100,000, and gave the stock of the $1,100,000 company to

the $40,000 company for its stock, and assets, and last June it was assessed at $1,800,000 and they demanded that they be allowed to earn interest on that amount Another concern started thirty-four years ago in the State of Maine with a capital stock of $3,500, and up to 1904 were still operating on that capital stock, although they were taxed on $400,000 worth of assets, and today have an investment that represents at least a value of $1,100,000. It has an actual investment paid in by the stockholders of approximately $300,000, and it is today earning 7 per cent. dividends on the $300,000, besides paying running expenses, making liberal allowance for the extension of its business, and then passing back to the farmers what there is left. In other words, in New England our experience has been that the money in the dairy business has been going to the people who handle and not to those who make the product. I don't want everybody to think I am prejudiced against milk dealers. They perform a service of value, for which they should receive a reasonable return, a return so reasonable that it will attract into that business brains and money of sufficient quantity and quality to conduct the business as it should be done, but I also believe, and I think you believe, that the man who makes the dairy products is entitled also to a sufficient return in his business to attract to it the brains and capital necessary to continue that business. (Applause.)

I believe that the interests of the consumers and the interests of the producers are identical. In our section, I hope it is not true down here, there is a feeling of antagonism between the consumer and the producer. The consumer has been reluctant to pay a price that would represent to the producers a reasonable return. I believe that if properly instructed the consuming public would not harbor a spirit of antagonism. In New England it got to be quite a critical situation. The milk supply of New England is at least 240 miles away from the market centre, Boston. We can't go farther south because we would run into the Atlantic Ocean. If we run farther east we strike the ocean again, we can not go west because the New York market interferes and absorbs all of the milk produced between New York City and Lake Champlain. We could not go much farther north without

running into the Province of Ontario, a foreign port. And so it is a matter of considerable concern to the consumers to preserve the milk supply.

There were two points of attack which may increase our revenue from this product. First, we may raise the price to the consumer, and get a part of the increased price; or we attack the distributing end and secure a larger proportion of what is already paid for milk. Our policy in New England has been to proceed along the latter course as largely as possible. It seems to us that there is a point beyond which the public will not go. It is a good deal like what Bob Ingersoll said. He had an argument with a preacher, and the preacher started out with "The Bible"—and Ingersoll says, "I deny the premises." The preacher did not know where to start.

We believe there is a point beyond which the public should not be asked to pay. The point at which they should be asked to buy it is that price which fairly represents cost of production on an efficient basis—I don't mean keeping a poor dairy, or keeping a poor herd, I don't believe that we ought to ask the public to pay for that kind of dairying. Probably some of you don't agree with me—I see you don't express very hearty approval, but at last we have got to subject ourselves to a test of efficiency in production. We believe that the public should pay sufficient to return a fair and reasonable profit on efficient dairying. (Applause.) Plus a fair and reasonable profit on efficient distribution. When we can link the price of our product to the price of distribution I believe that we can afford to put milk into our New England markets at a price which will not only compare favorably with what the public has to pay for other things. but at a price which will increase the consumption of milk. That is what we are after in New England—to make a larger market for our product.

Studying along these lines, we find as you find, that individual effort, no matter however intelligent, however well equipped it might be was absolutely useless when it comes up against united effort. I have been connected with this proposition for something like nine years.

I remember one time when I spent nearly three hours sitting on a bench outside of the office door of one of the big

dealers of the Boston market, waiting for the chance to talk to him. His clerks went in and out, the other people could gain access to him, but I was kept out there for nearly three hours cooling my heels. I am just mean enough to have felt good this last winter when I was able to keep that same gentleman, who owns a million dollars, waiting for three-quarters of an hour outside my door while I talked to some farmers—to tell the truth I told the farmers not to hurry. I really enjoyed it. This resulted from nothing else but the power of organization.

There is no use in these days discussing the necessity, or the desirability of organizing for marketing purposes. That it has gone beyond that state, we may safely lay down as a premise, and proceed from that point on without further discussion. We may safely assume that organization for market purposes with respect to this or to any other product is desirable. May I discuss with you just a moment what kind of an organization you need? I am not familiar with the organization that you have here, but I bring you this message. It may not apply to your situation, but take it for what it is worth. It is based on our own experience in New England.

I believe that an organization for the purpose of marketing dairy products should be upon a basis which clearly defines the relationship between the member and the organization. There should be a clean-cut business-like contract between the individual member and the organization. I believe that the member should be bound to the organization under an enforceable obligation. It has been altogether too easy with us, in days gone, to come in and get out. In other words, too easy for those who saw fit to withdraw for some little reason. So in New England we have a special Act of Legislature of Massachusetts, incorporating our organization as a non-profit organization, and every man who joins, signs an open contract which involves him in a penalty and makes the orgaization the selling agent for his product, and authorizes the organization to actually sell his product and collect the money and retain one-half of 1 per cent. as commission for doing so. I believe that in every cooperative organization, any organization for marketing—I want to impress that on

your mind—should have a clean-cut enforceable contract between the member and the organization which involves the member in a penalty.

CHAIRMAN: What form of penalty?

SPEAKER: I will give you a copy of our contract—It is expressed in the contract as liquidated damages. I am glad to know that you have the same idea down here in Maryland. It beats all, don't it, how nearly alike people's minds run. There is a story they tell up in New England about the deacon in the church who said that he was glad that everybody did not think alike, because every man in the community would want his Nancy, and the preacher got up and allowed if they all were like him nobody in the community would want Nancy. (Laughter.)

The second point that I would suggest is that every organization of this character needs financial support. If your organization is of any value you must back it up with money. That is a hard thing to make a whole lot of dairymen believe. That was the reason our first organizations in New England failed. They did not have funds. We believe in making an organization of some value, and then charging for it. I remember once when I was going to school I worked nights in a hotel. The old fellow who ran it was quite a philosopher in his way. One of our guests rang the bell in the middle of the night, one or two o'clock in the morning, and sent down word that he wanted a glass of milk. The storeroom was locked up for the night. It so happened also that the old Captain was sitting up in the office, and when this order came for a glass of milk, I said, "I don't see how we can get that fellow a glass of milk, the storeroom is locked up, and I haven't the key, it would take an hour to get it," and I said to the boy "Tell him that we can't get it." The old Captain said "Hold up, you send up for those keys and get that glass of milk." Well, it took me almost an hour before I could get the milk and send it up. When I did I opened up the books and studied them for a minute. The old Captain said "Well, Dick, what are you going to charge him for it?" I said "I don't know, I guess about fifteen cents." "Oh," he says, "charge him half a dollar." He says: "Remember this as long as you live, if you have any

connection with this business you get everybody what they want any time they want it, and then charge them for it.'' I think that is a pretty good idea. You have got to make your organization strong enough to render service, but it is going to cost you money. If the people don't finance it, don't put some money in it, their interest in it will not be so great. I am sometimes tempted to think up in New England the interest that is taken by the investor is measured by the investment. Have your money to work with, don't try to run on a short policy, if you will be guided by our experience in New England. I anticipate that you don't need this advice.

Now, another point I believe to be very vital to the success of a producers' marketing organization is the fact that it should be a producers' organization, that its membership should be made up of producers. We have got a very fine class of very fine people in New England, who have been termed in some sections ''uplifters.'' They like to join and help everything that is good, and we certainly appreciate the help and the support of the man who sees merit in a proposition and is willing to help it along, but if he sees merit in our proposition in New England and wants to help it along, we accept his assistance, financial or otherwise, and say ''Thank you'' but we don't permit him to vote. (Applause.) I am glad that somebody endorses that sentiment. The only man who can vote is the fellow who is in the game himself. I think some of our organization work in New England has had the value of it overcome by its drifting into the hands of people, however well intentioned, who did not understand the business or the psychology of farming, and so we have tried to throw around our organization that limitation—that everybody who has a membership and a voice in the organization shall be himself a producer of daily products, and being such he has an equal voice, and is eligible to any place in the organization. In our particular section, with a membership of over 15,000, scattered all over New England, many living three to four hundred miles away, it is impossible for the whole association to attend a meeting, and if a meeting were opened to everybody who belonged, only those nearby would attend and the nearby section would, of course, be in control, so that in our country the representative system is

used whereby local organizations are grouped to select representatives to a general meeting of our organization in Boston, and we have a voting membership in our general meeting, selected by the local organization back home, of about fifty men. These fifty men come from the different States, those coming from each State select one man from that State, and the committee of seven so selected constitute the directorate of our corporation, so that we have the authority narrowed down and condensed in a committee of seven people, with an Executive Committee of three, who hire a management and operate, actually operate the organization, and that finally is the last thing that I want to call your attention to—that there should be equal rights, but concentrated control. That is the very essence of organization, to focus the power of the many on a given point.

Now, in New England, that is our most difficult proposition among the dairy people themselves. Unfortunately up there we are fixed like they are in Louisiana. Down in Louisiana I am told they are ruled by public sentiment rather than by what is on the statute books. In New England public sentiment is as binding as any law, and up there among our people, especially among our farm people there is the greatest possible reluctance to passing over to somebody else any of the rights which the farmers have. We find some of those fellows who say "Oh, well, I don't know. I always did sell my milk, and I guess I won't pass it over to somebody else to sell for me." I have frequently noticed that this same class of dairymen was the very ones that would sit on the fence with me and whittle the rail down between his legs and say "Oh, well, everything is wrong, but I don't know, I don't see that we can do anything different." (Laughter and applause.)

Let me tell you that that is the greatest joy of my life to be able to go back and talk to those fellows and show them what the association has actually done for them. In New England we have two classes outside of organization who have not been reached. It is mighty hard to cover all the territory and see everybody. I don't know how it is down in Maryland, but with us you can't get much out of a farmer by correspondence, you can send letters until you are black

in the face, but you would get no answer. He says he has to work one of these eight hour days, eight hours in the morning and eight hours in the afternoon, and don't get much time for letter-writing. He usually writes his letters on Sunday. I get two and three hundred letters on Tuesdays and Wednesdays. You can't get much response from our people unless you go and see them personally. Some people in New England are perfectly willing to join us, only they have not been reached. The other class not members are those content to float along and get the benefit of the increased price and everything else the Association does, and then hesitate to join. Somebody might ask me "What are you going to do with a fellow like that." Up in New England when I get a chance at him, through our monthly publication and occasional meetings I tell him what I think of him. "The fellow who sits back and takes the benefits and won't join, is a marked man in his community. Public sentiment is a dangerous thing. He may not realize it. He may think he can defy it, but he can't. That old fellow is going to wake up. Usually he don't join because it will cost him a dollar or two, and he hangs back. He takes all the help without giving any. Every man in his neighborhood has him marked. When he goes down to the blacksmith shop they say 'There goes old Bill Jones, the mean skinflint.' They hate the sight of him, and he knows it. When he goes to church, unfortunately that type of man goes to church in New England—they talk to each other and to their wives and children and tell their whole community just what kind of a man he is. When his wife goes to the Sewing Circle, the Grange Meeting, they say, 'There goes the wife of that hard-hearted close-fisted old Bill Jones,' and she is a marked woman. When his children go to school or on a picnic, they go as the children of old Bill Jones, who would not loosen up for a cent and wants other people to pay his bills." I just talk to them that way, believe me. We can't expect to have everybody in. There will always be some of that kind of people, you will find them here in Maryland, who won't join, but you can make them mighty unpopular people. I believe that public sentiment is the best force that you can bring to work on them when that trouble comes.

I am most delighted with the opportunity of making this little trip down here to meet and see so many of you people interested in our common problem. Let me say to you in conclusion that it is a very hopeful sign for the future, and I wish that we might develop further beyond the limits of market milk to the problems of the manufactured product, but it seems to me a very hopeful sign for the industry that all over the country, we are speeding up the organizations like yours and like ours. Next week, a similar organization, a large organization of this character will come togethr in Chicago under the auspices of the National Organization. It is a significant fact and an interesting and a hopeful one that the President of the National Federation of Milk Producers Association was appointed on the War Board of the Department of Agriculture—Mr. Milo Campbell; I happen to know that he has proven an effective aid in the Food Administration in Washington. They are organized around New Orleans, in St. Louis, in Des Moines, St. Paul and Minneapolis, in Seattle, Portland, Oregon and San Francisco—the great Dairymen's League—spreading this spirit of organization all over the country not only among the class of people who are wealthy, but among the class of people who sit under the cow, the fellows who are on the ground making milk for a living. I am mighty glad to see all that over the country these people are getting right down to the ground and are getting together to promote their common interest.

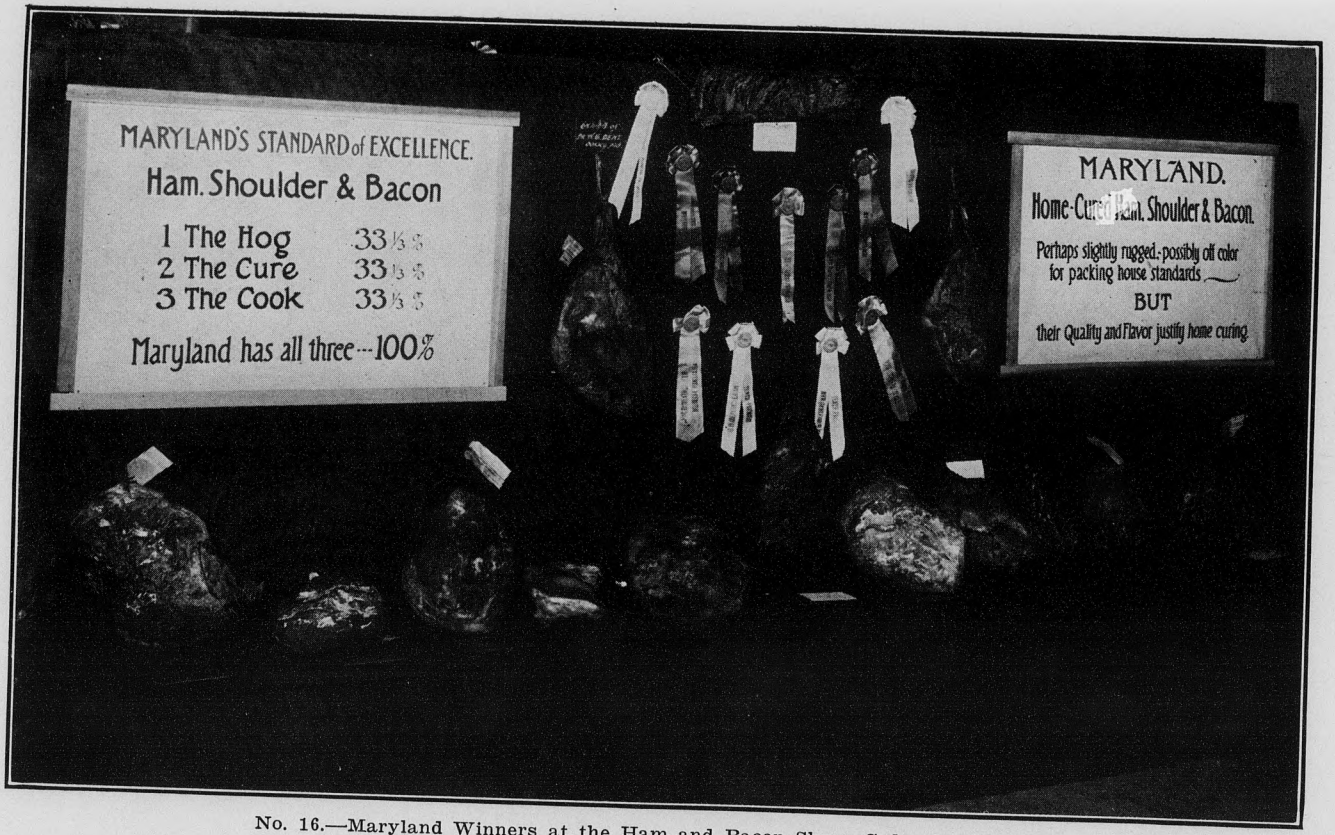
PRESIDENT HARRY: Mr. G. E. Wolcott will speak to us on "Making of Silage."

THE MAKING OF SILAGE.

By G. E. WOLCOTT, Specialist Maryland State College.

From the standpoint of storage the silo is an economical structure, since more feed can be stored in a given space in the form of silage than in the form of fodder or hay. When corn is placed in the silo there is a smaller loss of feed than when it is stored as fodder. xz

An acre of corn can be placed in the silo at less cost than it can be husked and the fodder cut or shredded. Weather


MARYLAND'S STANDARD of EXCELLENCE.
Ham. Shoulder & Bacon
1 The Hog 33⅓%
2 The Cure 33⅓%
3 The Cook 33⅓%
Maryland has all three---100%
MARYLAND.
Home-Cured Ham. Shoulder & Bacon.
Perhaps slightly rugged,-possibly off color for packing house standards
BUT
their Quality and Flavor justify home curing.

No. 16.—Maryland Winners at the Ham and Bacon Show, Cedar Rapids, Iowa.

I am most delighted with the opportunity of making this little trip down here to meet and see so many of you people interested in our common problem. Let me say to you in conclusion that it is a very hopeful sign for the future, and I wish that we might develop further beyond the limits of market milk to the problems of the manufactured product, but it seems to me a very hopeful sign for the industry that all over the country, we are speeding up the organizations like yours and like ours. Next week, a similar organization, a large organization of this character will come togethr in Chicago under the auspices of the National Organization. It is a significant fact and an interesting and a hopeful one that the President of the National Federation of Milk Producers Association was appointed on the War Board of the Department of Agriculture—Mr. Milo Campbell; I happen to know that he has proven an effective aid in the Food Administration in Washington. They are organized around New Orleans, in St. Louis, in Des Moines, St. Paul and Minneapolis, in Seattle, Portland, Oregon and San Francisco—the great Dairymen's League—spreading this spirit of organization all over the country not only among the class of people who are wealthy, but among the class of people who sit under the cow, the fellows who are on the ground making milk for a living. I am mighty glad to see all that over the country these people are getting right down to the ground and are getting together to promote their common interest.

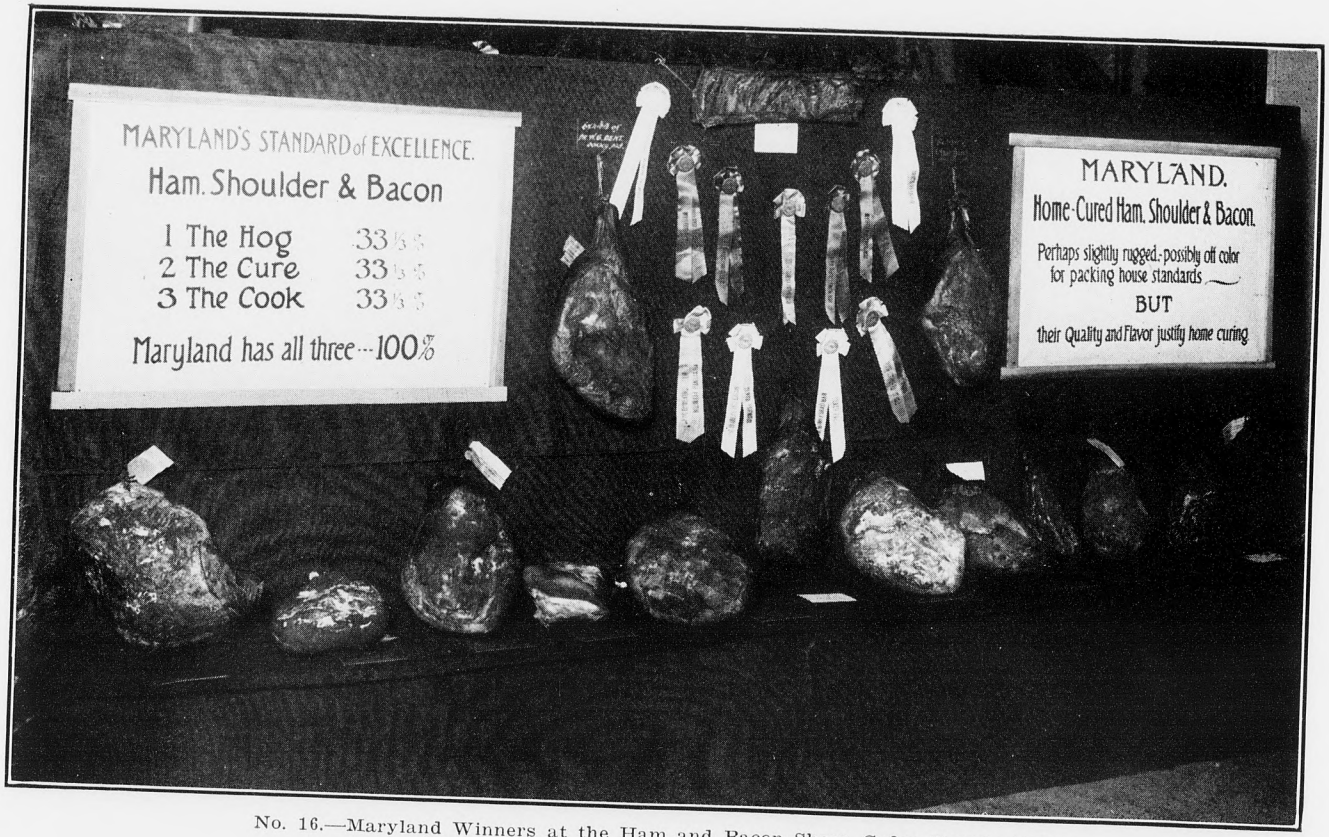
PRESIDENT HARRY: Mr. G. E. Wolcott will speak to us on "Making of Silage."

THE MAKING OF SILAGE.

By G. E. WOLCOTT, Specialist Maryland State College.

From the standpoint of storage the silo is an economical structure, since more feed can be stored in a given space in the form of silage than in the form of fodder or hay. When corn is placed in the silo there is a smaller loss of feed than when it is stored as fodder. xz

An acre of corn can be placed in the silo at less cost than it can be husked and the fodder cut or shredded. Weather


MARYLAND'S STANDARD of EXCELLENCE.
Ham. Shoulder & Bacon
1 The Hog 33⅓%
2 The Cure 33⅓%
3 The Cook 33⅓%
Maryland has all three---100%
MARYLAND.
Home-Cured Ham. Shoulder & Bacon.
Perhaps slightly rugged--possibly off color for packing house standards
BUT
their Quality and Flavor justify home curing

No. 16.—Maryland Winners at the Ham and Bacon Show, Cedar Rapids, Iowa.

conditions do not materially interfere with the making of silage; a light rain checks work in the fodder. When silage forms the basis of the ration more stock can be kept on a given area.

As a feed silage is cheap and palatable, and like other succulent feeds, it has a beneficial effect upon the organs of digestion. It is cooling to the system, slightly laxative, and gives the hard working cow a keener appetite for other feeds.

Silage is the cheapest and best means of providing succulence for winter feeding, which is essential for a large and economical production. When corn is worth $1.50 per bushel silage is as cheap or cheaper than alfalfa hay at $28.00 per ton or grain at $40.00 per ton.

The summer silo is the easiest way to provide roughage to convey the herd over that period of dry pasture in the late summer, when a decrease in production effects the yield during the remainder of the lactation period.

As to the making of silage, a considerable amount of feed is lost each year, due to spoiling in the silo. The spoiling is caused by the admission of air through leaks in the wall and around the doors of the silo. Other causes of loss are cutting the corn too green and before it has stored the maximum amount of feed material in the plant; or by cutting when dry and after a large quantity of water, which is necessary for proper packing, has left the plant. Cutting the pieces too long, the use of dull knives which shred rather than cut, an uneven distribution of the light and heavy parts of the plant are also responsible for large amounts of spoiled silage. Failure to pack well around the wall of the silo, neglect in leveling and wetting the surface when the filling is finished also result in spoiled silage.

Air spoiled silage has the appearance of rotted manure. If the walls of the silo leak, spoiled silage will be found within a radius of several inches of the leak. In case of a leaky door the silage will spoil to the depth of a foot or more.

When the corn is too dry or cut in long pieces or unevenly distributed white mould will appear. In a season of normal rainfall the proper time to cut corn for silage is when the end of the husk begins to turn yellow and the kernals are glazed and dented.

Where corn has been frosted or is too dry, water should be run into the silo so that the silage will pack in a solid mass. There is little danger of adding too much water.

Insufficient packing is often the cause of heavy losses, and packing cannot be properly done where the pieces are cut too large, where the material is too dry, or where the light material is left undisturbed where it falls. If the silage is well packed around the walls, however, the center will largely take care of itself.

When the silo is filled and the surface leveled, an air-tight layer will be the result of thorough tramping and wetting with water. Some dairymen run straw or weeds through the cutter so as to reduce the loss at the top to a minimum.

PRESIDENT HARRY: Our Government has been having four-minute talks all over the country, and so we will have four-minute talks this afternoon on this subject. The discussion will be opened by Mr. Robert Gist, of Carroll County.

MR. GIST: This seems to be an experience meeting, but I don't know much about this. I prefer it, I don't care how you make it, it don't make much difference. I find the green corn rather better than the sweet corn.

MR. RUTLEDGE: Fallston, Md. I find that the silo conserves the food for the cows. There is not nearly enough said to the farmers about the silo. Taking the country over there are not nearly as many silos as there should be. You won't find one silo in eighteen farms. They have different reasons—some haven't time to do the work; another man hasn't land enough. Some have an idea that if they have a silo they won't have time to do anything else, they want to get something for nothing out of the cows, and don't want to take any trouble. Some people cut the corn when it is too green, and some when it is not green enough.

MR. ROWE: I have not much to say but I will say this—I have experimented with this silo business. I have two, and I want three more. I have got the best results from cutting my corn when it reached the point just before it was ready to harvest. I prefer the dry corn in comparison with the green, so when I first start to fill I take a hose and begin pouring water into the silage from the bottom to the top, and I keep the water going. The dry corn takes up the water,

and when we come to use it the silage is softer and full of moisture and succulent, and it has the substance, we get a very much higher production from that silage than any other. I have tried it every way that I could. I don't have any old silage. I never had corn that had enough moisture in it, without having to add some more. My silage comes rolling out every day now, succulent, full of moisture and the cows are crazy for it, it is rich in corn. My cows get fat eating it.

MR. YOUNG: I agree thoroughly about the age of the corn when it should go into the silo. I put my corn in and when it begins to get very decidedly hard I pour cousiderable moisture in it.

A MEMBER: I would like to ask what the experience has been with some of these men in the spoiling of the silage in preserving the top layer of the silage.

MR. YOUNG: I have no spoiled silage on top of my silo. I scatter oat chaff over the top of the silo. The moisture causes the seeds to sprout forming a mass which keeps the air away from the silage on top.

PRESIDENT HARRY: We will now hear from Mr. R. Smith Snader:

MR. R. SMITH SNADER: Mr. President, ladies and gentlemen and members of our Association:

This has been a week, gentlemen, of great opportunities and of great possibilities to the people in the State of Maryland. The Southern Commercial Congress has seen fit to come to our old metropolis, Baltimore City, and she has thrown open her doors to it, and has given us the privilege of meeting with people from all over the United States, with statesmen, with business men and with men in every-day walks of life, and I say, gentlemen, it has been a week of great opportunity to us all to have the privilege of getting in touch with them.

Mr. Harry has said that we would have a discussion on the milk question. I feel that there is not much left for me to say along these lines after listening to the splendid addresses of the speakers of the morning and of the afternoon. I feel that the ground has been sufficiently covered, but I will touch a little on the organization work that I have been in-

terested in ever since we have gone into the organization work of the Milk Producers' Association of the State of Maryland. We have been working hard on this for about two years. I can hardly realize when I look around and see these electric lights, that we dairymen of the State of Maryland have the roof garden of the Emerson Hotel for our meeting place. Five years ago the dairymen of the State of Maryland when they came to Baltimore City warmed corners at the different stations, waiting for a milk man that would take our milk. They would say "If you will take such a price for your milk, I can handle it; if not, I don't want it," and we would place our milk and go off home, and in a few days we would get word to discontinue shipping that milk and they did not want it, it did not suit, and we would have to make another trip down. So, gentlemen, all these things brought home to us the value of organization. We as dairymen and farmers of the State of Maryland after we produce an article we should have the privilege of getting for it the price of production plus a reasonable profit. I say plus a reasonable profit. In going into the cost of production of milk, we have been up against several hard propositions. In starting out to organize a few years ago, a committee of us came to Baltimore City. We had interviews which were not very encouraging with the dealers of Baltimore. We told them the object of our visit and our plans but they shook their heads and said that they could not take much stock in the enterprise we were talking about. We were up against it hard. We called meetings, met the farmers, and had interviews with them. The dealers had been organized for some time, we were the weaker element, and it just seemed as though we could not get together on any exact plan of organization. But we kept on and feel that we have with something over one hundred members, and I think we must now have something over one thousand. We feel that we have got on a business basis and that under our new plan of organization with our members keeping the contracts and pledging themselves to stand by the work of the organization, we feel that we have accomplished something. In starting out we realized that there had to be something done in order to conserve the milk interests of the State of Maryland.

When we commenced to figure we found that we were not getting what it cost to produce milk, and we decided that in order to stay in the business it was necessary for us to get cost of production. I know in my locality two years ago quite a number of our best dairy cows went to the slaughter house because of this fact. We felt that there was cause for immediate action in order to conserve our interests. I feel that through our organization we can conserve these interests, and I hope that through the cooperation of the organization, the dealers and also the consumers a great deal can be accomplished.

The Association will require a certain amount of educational work which will have to be done. Out in our county we found that we would meet up with our neighbor and he would say "Well, Mr. Snader, I always have handled my own business and I don't know about changing and joining this organization." I found that a certain amount of educational work had to be done in order to get our fellow-men into this organization. Our State College has done a wonderful work in sending us the very best men available in order to do this organizing. Great things have been accomplished which we people in the State appreciate, and together with our State College and the cooperation of our local branches we have organizations in every county that produces milk, and ships to to city of Baltimore. I feel that through the cooperation of the united organizations and the cooperation of our State College and the Agricultural Department, this will grow to be one of the organizations for good in the State of Maryland. I want to say to you gentlemen that the future of this organization depends upon you. Let us hitch up together, let us cooperate, go home enthused and reach out and get all dairymen into our membership.

MR. SPARKS, of Baltimore County: I haven't anything to say. I notice our audience wants to get back home.

Let's everybody see that everybody signs up on this, and when they are signing tell them that they are signing a new Declaration of Independence. I think like the gentlemen from New England that the time is here for the milk producers. Everybody who is not in this Association is acting very badly towards his fellow man. We can put every in-

dividual producing milk on his feet, increase his business, increase the respect of everybody for it, increase the value of land. You talk about the return of our soldiers, and opening up new land. I say right now there is not a bit of use opening up new lands in this country until we have the lands now opened up all cultivated. What is the use of opening up new land? To put people on it to starve, and let us on the old land starve too. What we want is to have farming recognized as a business, not as something for somebody to have as a toy or as something to get pleasure out of. Let it be known as something that a man can go on and make a living out of. If the Government wants to do something for the people returning let it encourage agriculture right in the places where we now are. When it is looked upon as a business, and will give a return of profits, the people will open these new lands themselves fast enough.

There are great troubles ahead of us, and we cannot overcome them except by organization. There may come a fight when our organization will have to say to the milk distributors of this town that if they don't pay a certain price we will not ship them the milk. They may say they won't take our milk, and there may come a time when we will be asked to hold our milk. Let our organization be so strong that if that time does come every man in the organization will be willing to keep the milk on the farm and stand the loss that may come. Let us pledge our sacred honor to this thing, and all our worldly goods and make it go. Let us have the same spirit of independence that they exercised to make this great Government, and if we do that we will be a great success.

PRESIDENT HARRY: We will now have the "Report of Price Committee" by Mr. I. W. Heaps.

MR. HEAPS: Before I say anything about price, I want to say that Mr. Pattee must have traveled over this territory for he had the same experiences that I have, and each one of us people who have been working in the same way. One other point—he spoke about the production centre in the New England States drifiting back a number of miles. I know that everyone of you here five or ten years ago would have said that the milk production of Baltimore laid along

the four railroads delivering milk into Baltimore City. I have not the figures and I am not going to make a guess. I don't know of a section of country that produces milk in any quantity that today is not traveled by trucks delivering milk into Baltimore City. If you will take out of Baltimore City, the milk delivered by truck, and use nothing but what is coming in by rail you would not have a whole lot of milk, would not be well supplied. I also know, and I know that you know in your own community of numbers of the largest producing farmers years ago that produced milk that was shipped from their station are out of business and have been out of business for two or three years. They don't seem to be making any move to get back into the business, because they got out at a loss, and they diverted their attention to other lines of agriculture, which to them paid better, and had less work and trouble. They did not see enough in it to go to the expense of getting back into the business and go through what they have in years gone by. There will be greater changes in the next five years, in the next five years where is Baltimore City's supply coming from? It will be like that gentleman said about what the old Colonel told the young man—go where the money was. When the money is on the farm, where the dairy is, and where you get the milk, then you will find them returning to the farm. A great many of us like to be very careful, we don't like to be driven out of business, if we can help it. We are trying to be kept from being driven out of business. There are a few of us who know what we have been up against.

Now, I am not going back further than last August or July. The Price Committee got together and agreed that we could not under any circumstances afford to produce milk for less than an average of forty cents for eight months beginning September. The Food Administration has been after us for a year, promising investigation, and they had an investigation but found it would never do to publish the findings—now whether that is true or not, they never have published it. Our College made an investigation, and we know what that was, but when we made this price, Judge Lamb, Assistant to Mr. Hoover, called us to Washington and informed us that we should work out a price on a formula

which he had there, a formula used out in Chicago. The Committee with representatives of the dealers and the College got together and unanimously agreed on this formula, which represented practically the same regulated price that the Price Committee had named. Well, time went on for a little while and Mr. Lamb neither approved nor disapproved. On the 23rd of August at a meeting in Oddfellows' Hall the schedule of prices was announced, and the dealers paid the schedule price for September, and in October there was some disagreement about the price for October milk. We had another conference with Judge Lamb. They can figure as fast as I can milk. They were able to figure that we were not asking more than the cost of production, and they authorized the dealers to pay our prices. The schedule price, as most of you know, was 38 cents for September, 40 cents for October, 42 cents for November and December, up to 38 cents in April, and I am glad to say after some misunderstandings with some of the smaller dealers who claimed that they thought the price should be lower, we have got today nearly, if not absolutely a uniform price in Baltimore City. My attention was called today to one dairy that fell down last month, I have not been able to see the gentleman yet. I feel pretty sure that it can all be made right.

Now, I could not add a thing to the report, and it is not worth while to take up time. After listening to what we have today every dairyman that was fortunate enough to be here can go home feeling it has been good for him to have been here.

I want to say just a word or two in regard to the Association. There has been very recently one little trouble, I am sorry to say, I hate to say it publicly, but I am taking this opportunity because I think I can reach more people in less time. I think it is only fair because the Association stands for the betterment of the dairy interest, it stands to produce a better product. We want to produce it more economically, and we want to improve our herd. But the point that I want to mention is this—that our attention has been called in a number of instances very recently where some of our members stopped shipping milk on account of water. I think that very largely that may be due to the fact, and

probably you have heard it expressed, and may have said so to yourself—"My milk is more than 5 per cent. butter fat, and I am not getting paid for that extra fat," and therefore you think it all right to water it, but that milk is just as much against the City Ordinance as the 3½ per cent. milk, and the water is just as easily detected. I say this as a warning. I say it in kindly feeling for your benefit, and for the benefit of the Association. It is not good policy nor honest. If you were getting any old price for your milk, and they were only paying prices for half water and milk, it would be different, but we have established a price for milk, and the Association has obligated itself to handle the milk. Now, don't think for a minute because you are a member of the Association that you can water your milk. We are not running that end of it, the Health Department is. I don't see Dr. Hopkins here this afternoon, but he was this morning. They are running that, and fortunately or unfortunately we don't have that in hand. I don't think Dr. Hopkins cares whether you are a member of this Association or not, if your milk comes here watered you are going to go down. We want to be on our honor, and see to it that no one puts water in it, see that we are giving the pure, unadulterated article.

A MEMBER: Are the other shippers, not members of this Association, getting the same prices, as the members of the Association, from the dealers?

MR. HEAPS: As far as I know they are.

Some of the dealers are paying one cent less to outsiders. If the members are not paid the full price, the Association should be notified. They are not responsible unless the business manager is notified that they are not getting the full price.

PRESIDENT HARRY: Dr. Reed, Chief Animal Industry, Maryland State College, will now address us on "Tuberculosis in Dairy Cows and Methods of Control."

TUBERCULOSIS IN DAIRY COWS AND METHODS OF CONTROL.

By DR. R. C. REED, Maryland State College.

Gentlemen, I know you are in a hurry to get home, and it is going to be impossible in the next ten or fifteen minutes

to cover such a tremendous field as would have to be covered in a discussion of tuberculosis. I hear some of you say that I am not talking from the standpoint of the dairyman. I can assure you that I am a dairyman and that my dairy consists of one cow and one heifer calf. I am vitally interested in the dairy business and in dairy products. This disease, tuberculosis, is considered the greatest scourge among dairy cattle. It is the one disease that causes probably the greatest loss to the dairyman with which we have to deal.

If this disease causes the greatest loss, how are we going to prevent this loss? We have tried out a great many methods, many of which have been more or less failures, but they have all tended to give us a certain education along those lines that will help eventually in disposing of the disease. None of us, unfortunately, will ever see the day when tuberculosis is eradicated from our herds, but if we can only realize that we are feeding this germ, that we are putting up silos and feeding a disease that is undermining the very industry, then to some extent, we will realize what it means to feed tuberculosis animals. An animal that is diseased cannot do her best, and at the most the dairy cow is a manufacturer herself. She manufactures milk and dairy products, the most vital food that we have for the nation.

Just a moment ago, I was asked: "Is anything in the way of an organized effort being made to do away with tuberculosis?. Has anything been done since the war started? I feel that one of the greatest steps that has been attempted in this work has been taken since the war started; that is, in cooperative tuberculosis eradication work between the Federal Bureau of Animal Industry and the various States. Of course the original point was to establish what was known as accredited herds. This will do away with a certain amount of red tape. For instance, the laws of Minnesota are similar to those in Maryland. The same is true in New York and a number of the other States. I think everyone of them has a law prohibiting the shipment of dairy or breeding cattle into those States unless they have passed a satisfactory tuberculin test. These accredited herds are herds that are tested by the Federal Bureau of Animal Industry in cooperation with the various States. After a herd has passed two satis-

factory annual or three semi-annual tests with no reactors that herd is eligible to the accredited list. I might say that there are several thousand of these herds in the United States today. This accredited herd method does away with one of the unfortunate things that we have had to deal with in the past, and that is, too frequent tuberculin tests. If this work can be carried on to the extent that practically all of our pure bred herds shall be placed on the accredited list, we will be able to ship freely from one State to another without the expense and trouble that we have had in the past, and sometimes aiding the disease by too frequent testing.

It has been just a little over a month since Maryland has been in a position to cooperate with the Bureau of Animal Industry in this work, and I am glad to say that we are now in full cooperation, and that we are only too glad to have applications for this form of testing.

I might explain a little about the method employed in bringing this test about. Regulations were formulated and indorsed by the U. S. Live Stock Sanitary Association in 1917, and re-indorsed at the recent meeting in Chicago only two weeks ago. These regulations were worked out not by Federal and State authorities alone but by a body composed of the best cattle breeders and dairymen in the United States. It was necessary to place a limit to the amount at which condemned animals could be appraised. This limit, as the law now stands in Maryland, is $150 for a pure bred animal and $75 for a grade. In making the adjustment with the owner of the condemned cattle, the salvage is deducted from the appraised value and the remaining amount is divided into three equal parts, the Federal Government bearing one-third, the State one-third and the owner one-third. This makes the loss a comparatively light one to the owner. I hear some one say: "I have a cow here that before her reaction to the tuberculin test was worth $500, $1,000 or even several thousand dollars. How much can she be appraised for today? As the law now stands in Maryland, she can be appraised for $150. I am glad to say that this matter was taken up at the last meeting of the Live Stock Sanitary Association and a resolution passed recommending that this appraisal value be raised, and raised very materially. Just what that figure will

be, no one knows. However, in answer to the gentleman who said that the $150 limit was the reason he would not want his cows appraised, I will say that he can't afford, from a financial standpoint, any more than you or I or anybody else, to propogate such a disease on his farm.

When you find that you have calves a few months old diseased due to taking the milk from your tuberculosis cows, you may feel very sure that your losses in the long run will be tremendous especially if you are raising pure bred animals. You would have done better to have gotten rid of the diseased animals as soon as you found that your herd was infected.

Your loss will come all at once if you clean up and destroy the tuberculosis animals, but the loss comes at one time, and consequently it hits a little harder. If the loss is distributed over a period of fifteen to twenty-five years it is not going to be felt quite as much, but the loss is there just the same. It reminds me of a little story which most of you no doubt have heard, but it illustrates the point. A man traveling for a wholesale firm went out on the road, and came back at the end of about three months and presented his expense account. In that expense account was a charge of $35 for a suit of clothes. The boss said "We can't pay that. You will have to take that off." "All right, take it off." At the end of his next trip he again presented his expense account. It was very carefully scrutinized to find another suit of clothes. The boss said "You didn't buy a suit of clothes this time?" "Oh, yes, a suit of clothes is in there, but you don't see it." That is exactly the case with tubercular animals. If you clean up once, you feel it. You know that you have suffered financial loss, but if you don't clean up all at once, you do not notice the loss but it is there and is bearing interest all the time, and a mighty high per cent. at that.

In conclusion, I might touch on what is sometimes called the sentimental side. I feel that it is hardly necessary and hardly right, and yet I cannot help but mention it at this time. It is in connection with the dangers to human beings. It has been proven beyond all question of doubt that by far the greater majority of the cases of tuberculosis in the human family are contracted during infancy and early childhood,

and that the percentage of those who contract tuberculosis is extremely high. Of those who contract tuberculosis in infancy, at least 25 per cent. contract it from tubercular milk. This statement has been proven beyond all question of doubt by the most careful investigators of tuberculosis.. In view of this fact can we afford to encourage the keeping of tuberculosis animals? There are a good many other things that I might say regarding tuberculosis and its control.

I am sorry to say that we have not laws that will as yet control the disease, largely due to the fact that laws are inoperative unless the people make them operative, and partly due to the fact that the only laws that we really have are those governing the inter-state shipment of animals.

A MEMBER: What are the symptoms with regard to tuberculosis? How can you discover it in an ordinary cow?

DR. REED: I am glad that question was asked. In the ordinary dairy cow it is impossible, unless the disease is very far advanced, and sometimes not then, to discover it without the application of the tuberculin test. That seems to be the only method of diagnosis of the disease at the present time unless it is manifest on the outside somewhere where we can find it. I might add here that there is a mistaken idea regarding the use of tuberculin, and that is that the tuberculin injures the animal, or that it is liable to produce tuberculosis. That is not the case and cannot be he case. If you get the tuberculin from a reliable manufacturer, and it is made properly, it cannot produce tuberculosis.

A MEMBER: But if it is injected too frequently it is liable to produce it?

DR. REED: No, that is impossible. What it can do, and perhaps what you have in mind is one of those cases where the disease progresses more rapidly after the tuberculin is injected. That has sometimes been the case with the human family, but it cannot produce the disease no matter how frequently it is injected.

A MEMBER: What provision has been made by the Government to discover some little lesion, sometimes they don't discover the lesion and the cow is killed. What provision is made for that? There is a weakness in the law there. They come in and they take charge of your animals and you

don't have a word to say about it. They test and they find a reactor and the animal goes to the slaughter house and perhaps there is no trouble with the animal. There is great difficulty in finding the location of the tuberculosis.

DR. REED: I look at it just as everyone else who has studied the proposition both from the practical and from the scientific standpoint. It is entirely possible that the lesion may be so small as to be only discoverable by the use of the microscope. There, we must admit is a weak point in the tuberculin test, and I think that one hundred per cent. of the honest men using the tuberculin test for years, as I have, will tell you the same thing, that we cannot tell after we get a definite reaction whether that animal has a microscopic lesion or is an advanced case. In this connection, it is interesting to note that frequently young heifers after the first calving period tend to more or less rapidly lose in condition. They may start in with a good flow of milk which decreases after the physical condition goes down. A post-mortem on such an animal frequently shows that this rapid decline was due to what probably was a very small lesion previous to the time of freshening. It all indicates that she possibly contracted the disease from taking the milk from a tubercular dam. We believe that this rapid development of the disease is due to the shock of freshening as any special strain on an animal tends to weaken her vitality and is liable to cause even a small lesion to suddenly become active. Such cases usually become dangerous fairly rapidly.

MR. HARRY: I want to say that there is a vacancy in the Board of Directors. The member elected at the August meeting failed to qualify.

MR. SNADER: I suggest that we should have a director from Frederick. My understanding is that our Frederick director is the one that has failed to qualify. I nominate Mr. Zentz, President of a local plant at Thurmont. I feel that he would make a good director.

The nomination was seconded and carried.

DR. THOMAS B. SYMONS: I want to move that a vote of thanks be extended by this Association to the Emerson Hotel for the use of this room, and also for the cooperation of the

Southern Commercial Congress in the various meetings during this Convention.

The motion was seconded and passed.

DR. SYMONS: I move that rising vote of thanks be given to the speakers of today, for the magnificent program which they have rendered.

The motion was seconded and passed, and all arose.

The meeting was then adjourned.

REPORT

OF THE

MARYLAND STATE BEEKEEPERS' ASSOCIATION

TENTH ANNUAL MEETING.

FRIDAY, DECEMBER 13th, 1918.

The meeting was called to order at 2 P. M. by Mr. Cale who acted as chairman in the absence of the President, Mr. James.

First on the program was the report of the Secretary and Treasurer, Mr. Cale. The accounts stand at approximately $35.00. The Association's bank book was taken to the bank where the money is kept a few days before the meeting with the request that it be balanced. When it was again called for the bank was unable to locate it but was able to report a balance of $24.02, which augmented by membership dues received for 1919, brings the total to $35.00 approximately. The Association has incurred no expense except for postage on a circular letter sent out previous to the Baltimore meetings. Attention was called to the efforts made in 1917 to create interest in the annual meeting. Three hundred circular letters were sent to a selected list of beekeepers and a second circular letter was issued, urging attendance. Thirty people responded, or about ten percent of those to whom letters were sent. The same methods were followed for the present meeting but the response has been no better.

The President's Annual Address was eliminated because of the absence of Mr. James. The Secretary continued his remarks urging the loyalty of beekeepers to the Association from the fact that it is the only active body directly interested in the needs of the beekeepers of the State, except the Baltimore Bee Club.

No 9.—Modern Community Kitchen at Frostburg, Md.

THE STATUS OF BEEKEEPING IN MARYLAND.

By E. N. Cory, State Entomologist, College Park, Md.

The office of the State Entomologist sent out a questionnaire for the purpose of obtaining the status of beekeeping in the State and the salient points connected herewith. These facts have been summarized and I believe that the figures will be of interest to the Beekeepers' Association. In sending out these questionnaires we promised to make the information available for you and we expect to publish a bulletin or circular containing the information which I am about to give you. There was a total of 176 beekeepers who answered the questionnaire. These men had a total of 3,395 colonies. The vast majority of them only keep a small number of bees and the total number of bees in the State is very much lower than it should have been on account of the severe winter which exacted a toll of nearly fifty percent. In other words there should be at least, under normal conditions, six to seven thousand colonies of bees in the State. Of course, all of the bees in the State are not reported in this census, but the majority of those kept in modern hives were reported, we believe.

Yield of Honey.

The yield of honey was approximately 100,000 pounds. Of this 60,909 pounds was comb honey and 36,737 was extracted honey. In the past we have urged the production of extracted honey in preference to that of the production of comb honey, particularly by the beekeepers who are making a livelihood of apiculture, but the results achieved by some of our best beekeepers in producing comb honey and the market demands therefore, certainly warrant the continuation of beekeepers along the lines that they have been working on for the past several years. Since comb honey production is a highly specialized branch of apiculture, it would seem advisable for the beginner and the men who have not established a definite trade in comb honey to undertake the production of extracted honey.

The average yield of honey per colony was extremely low, only 29 pounds; but this average is based upon the results obtained by both beginners and professionals and by those

No 9.—Modern Community Kitchen at Frostburg, Md.

THE STATUS OF BEEKEEPING IN MARYLAND.

By E. N. Cory, State Entomologist, College Park, Md.

The office of the State Entomologist sent out a questionnaire for the purpose of obtaining the status of beekeeping in the State and the salient points connected herewith. These facts have been summarized and I believe that the figures will be of interest to the Beekeepers' Association. In sending out these questionnaires we promised to make the information available for you and we expect to publish a bulletin or circular containing the information which I am about to give you. There was a total of 176 beekeepers who answered the questionnaire. These men had a total of 3,395 colonies. The vast majority of them only keep a small number of bees and the total number of bees in the State is very much lower than it should have been on account of the severe winter which exacted a toll of nearly fifty percent. In other words there should be at least, under normal conditions, six to seven thousand colonies of bees in the State. Of course, all of the bees in the State are not reported in this census, but the majority of those kept in modern hives were reported, we believe.

Yield of Honey.

The yield of honey was approximately 100,000 pounds. Of this 60,909 pounds was comb honey and 36,737 was extracted honey. In the past we have urged the production of extracted honey in preference to that of the production of comb honey, particularly by the beekeepers who are making a livelihood of apiculture, but the results achieved by some of our best beekeepers in producing comb honey and the market demands therefore, certainly warrant the continuation of beekeepers along the lines that they have been working on for the past several years. Since comb honey production is a highly specialized branch of apiculture, it would seem advisable for the beginner and the men who have not established a definite trade in comb honey to undertake the production of extracted honey.

The average yield of honey per colony was extremely low, only 29 pounds; but this average is based upon the results obtained by both beginners and professionals and by those

who brought the bees through the winter of 1917-18 in good condition as well as those whose bees came through in such a poor condition that no honey could be expected from them. It is interesting to note that the highest average yields were made by the comb honey producers. The highest single hive production of which we have any record was 280 pounds of comb honey. Several beekeepers made average returns of from 90 to 100 pounds per colony. The highest yield of extracted honey was 83 pounds and the general run of the larger producers was between 50 and 60 pounds. This indicates one of two things, either that our beekeepers are more familiar with the manipulations necessary for producing comb honey than they are with the operations used in the production of extracted honey, or that the State is more suited to the production of extracted honey. I can hardly believe that this is the case and I am inclined to believe that once the same energy and intelligence is directed toward the production of extracted honey as has been used in comb honey production, we will find that the returns from extracted honey will be relatively higher.

Price of Honey.

Another striking thing developed by a study of the replies to the questionnaire was that our beekeepers did not enjoy to the fullest extent the increased price that honey commanded the past year. True, the prices that they received, which averaged from 20 to 25 cents for both comb and extracted honey were higher than in years previous, but the market reports show that this average price is from 5 to 10 cents below the wholesale price. When it is remembered that a large proportion of Maryland honey was sold locally at retail, you will see that the honey producers in the State were not receiving as much as they should have on the basis of the market price. No doubt this high price will not obtain in years to follow and possibly it was a wise business policy not to demand the high price that was current; but when the honey producer has to pay for everything he uses on a rising scale, it makes me feel that he too should have received his due share of the increased selling prices.

Winter Protection.

In the questionnaire we asked whether any means of packing was done and it was interesting to note that 56% of our beekeepers consider that they are giving some sort of winter protection. This packing varied to a great degree. In some cases it consisted simply of an extra super with leaves or chaff; in other cases side and top protection was obtained by the use of leaves held in place by chicken wire and fodder placed on top; still another style was the use of newspaper or building paper jackets and in some instances merely used as a wind-break. In only three apiaries was the double-walled hive used. By the users of this type of hive, excellent success was reported. In a fed cases the Government style of packing case was used. It seems to me that the subject of winter protection deserves careful consideration and that it is a problem for each beekeeper to solve for himself, using such materials as will afford ample protection and at the same time allow for brood expansion in the spring.

Summary.

Total number reporting	176
Total number of colonies	3395
Yield of comb honey	60909 pounds
Yield of extracted honey	36737 pounds
Total yield of honey	97646 pounds
Per cent comb honey	62%
Per cent extracted honey	38%
Average yield per colony	29 pounds
Average price for comb honey	20 and 25 cents
Average price for extracted honey	20 and 25 cents
Number using double-walled hives	3
Number-packing in any manner	98 or 56%

I hope to get a similar report each year and your cooperation in getting out this report will be deeply appreciated and I trust that your interest will continue in the matter and that next year's report will be productive of more complete data.

Report of Secretary-Treasurer.

A list of 300 beekeepers were written to twice urging attendance at the meeting held in December 1917. A similar method was followed in 1918 with a list of 100 beekeepers. Postage for this work was of course supplied from the Asso-

ciation's Treasury. In connection with the 1917 meeting a display of honey and containers with various types of advertising matter was featured in the assembly hall and added considerable to the interest of those in attendance.

Election of Officers.

The following officers had no opposition and were elected by acclamation:

President.....Dr. J. R. Abercrombie, 1316 North Charles Street, Baltimore, Md.

Vice-President.....Mr. S. G. Crocker, Charles Street and Cold Spring Lane, Baltimore, Md.

Secretary and Treasurer.....Mr. E. N. Cory, College Park, Md.

Delegate to the Agricultural Council.....Mr. Samuel Cushman, 321 Equitable Building, Balitmore, Md.

Treasurer Statement.

Resources.

Dues, 1918-1919	$16.00

Liabilities.

Balance, December 1, 1918		24.02
Balance, December 1, 1919		$40.02
To Frank Lea, Sandy Spring, for lceture, 1917 Annual Meeting—		
Expenses only	$2.00	
Postage, 1918	2.40	
		4.40
Balance, December 13, 1919		$35.62

Respectfully submitted,

G. H. Cale, *Secretary-Treasurer.*

SPRING MANAGEMENT OF BEES.

By Samuel Cushman, Baltimore, Md.

Ladies and Gentlemen:

Prof. Cory asked me day before yesterday if I would take the place of the speaker on this subject who could not be here. I told him that I would do the best I could.

I would say that I have had but two seasons' experience with bees in Maryland. Thirty years ago I was the leading beekeeper in Rhode Island and had as many as 100 colonies of bees. Then I had read everything in print on bees. The last twenty years I have had nothing to do with bees except these two last seasons, during which I have tried to make myself up to date with modern methods.

Some excellent beekeepers claim that if you do the right thing in the summer and fall your bees will do best to take care of themselves in the spring. I believe that there is a great deal in that. The longer I keep bees the more I believe that the less you open them up the better, except to do something very important. Every time you disturb them you hinder them and put them back. I used to have some colonies that would give 125 pounds of extracted honey, others would only produce 40 pounds. I used to think that if I could get them all to do as well as the best it would make a great difference.

It is of great importance that all colonies should be strong when they go into winter quarters, not only strong in bees but with a great proportion of young bees. Some claim that the best winter packing for bees is young bees and a lot of them. If most all the early summer surplus is removed and the bees are unable to gather any in summer and fall owing to lack of breeding they will go into winter quarters with old bees that can not possibly live until breeding time in the spring, or until fruit bloom. They may live through winter all right and consume the honey but dwindle away in the spring.

I am more and more in favor of doing as little as possible with the bees, but that you do the right thing at the right time.

Now suppose that we are to manage a lot of colonies that we had nothing to do with the season before. What we want is to get a good crop of honey and it is only the strong colonies that will give a good crop. In my locality the harbest time is between May 20th and June 30th, two weeks later than in lower more sheltered places a few miles away. If you do not have your hives overflowing with bees by that time the bees are an expense to you and are idlers. How will we get our hives overflowed with bees by then?

First, sometime in March I would find out if the bees are going to starve before fruit bloom. Open your hives carefully and with as little disturbance as possible. If they are short, slip in a comb or two of capped honey from your reserve and close them up, contract the entrance and wrap them up warm. This is a poor time to feed syrup but you can give hard candy over the frames if you have no honey in brood combs. If the hives are not protected by a wind break provide something right away. Fix up something that will keep the wind away. A thin walled hive with no packing is better off with a good wind break than a winter packed hive left where it takes the full force of the wind. Both should be provided.

If you have single walled hives unpacked put an empty brood chamber on each and fill with dry shavings, sawdust or chaff, or still better, discarded woolen clothing. If you wish you can cover each hive with good building paper. It will make a big difference in the way they build up. The greatest benefit of packing is in March, April and May. If you have no empty brood chambers use soap boxes of a similar size without cover or bottom to hold the top cushion and cover it up from the wet. Bees waste rapidly in early spring hunting pollen nectar and water in the cold and wind. Give them a watering place in a sheltered place near by.

At this time we have tried the Alexander plan of hurrying brood-rearing by putting weak colonies above very strong ones with a queen excluder between and it has worked well in most cases. This is done quickly, without the use of smoke, so the bees hardly realize it. The bees of the upper colony fly out at the entrance of the lower colony. The queens are kept separate by the excluder. Usually the upper colony breeds up fast from the additional heat and food. When they are boiling with bees they may be separated. Not one queen was lost when 14 box hives were put one over the other in pairs one spring. Wire fly screen was put between at first and the upper hives allowed to fly from their own entrances for a day or two, then this was removed and upper entrances stopped and only excluder was between. In other cases one out of three queens were missing and the bees had gone below. It is important that the upper hive is not disturbed or

smoked frequently. E. R. Root now recommends using a double excluder between the hives so it is impossible for the queens to reach through to sting each other.

The first flow of early nectar from Maple blossoms causes a little brood rearing, it may be but for a few hours or for a day or two or weeks but it helps egg laying and causes demand for pollen and water. The sun warms them up up also especially if hives are single walled and unprotected. If this is followed by a severe cold spell the cluster is contracted to keep warm and some of the brood may be left out of the cluster to die and be thrown out. This puts them back. Well protected hives may keep right on breeding without any check under the same conditions.

As young bees just out of the cells are the best nurses the more they emerge the faster brood rearing goes on. As it takes five or six weeks to produce honey gathers from the egg it is important to stimulate brood rearing eight or ten weeks before the main honey harvest. This may be safely done with protected hives as soon as bees are flying three days a week and bringing in pollen, by feeding each day a half pint or pint of thin sugar syrup to each colony. It need hardly be much more than sweetened water. I have used the Boardman Fruit Jar entrance feeder, also the Alexander feeder which is placed at one end under the hive and the gallon can with holes in cover turned upside down in an empty hive over the brood frames with packing around to keep in the heat. You can see at a glance how much the Boardman feeder contains, but bees will not take the feed on the coldest days in spring. I prefer the Alexander feeder to the Boardman but you must have a flat hive stand to hold it. Two tomato cases turned bottom up will answer for this. The gallon friction top can half filled with thin syrup once or twice a week seemed to give just as good or better results.

A colony with large reserve stores and a large quantity of bees will breed up gradually and rear bees much faster than they are lost and build up for the early honey flow, as the queen is soon able to lay to her full capacity. Weak colonies may barely hold their own and be unable to gather any surplus, they are of no use except to build up for another year.

It makes a big difference whether you have a lot of colonies with only 10,000 or 15,000 bees each or they all contain 50,000 to 60,000 bees at the beginning of the honey harvest. Therefore in this locality of early harvest GET THE BULK OF YOUR BEES IN AS FEW HIVES AS POSSIBLE AS SOON AS POSSIBLE by taking frames of capped brood from weak colonies and give them to strong ones. This allows the queens to soon lay to their full capacity 1,000 to 3,000 eggs per day and increase the population of the hive very fast.

I believe that if you feed 10 pounds of sugar made into thin syrup to every colony at the right time to rush brood rearing it will increase your surplus honey crop at least 25% no matter how much reserve stores there may be in the hive. If you make a mistake and feed too early, before the weather is right and a cool spell follows they may have a set back. It may do harm unless your hives are tucked up very warm.

If we transfer brood to strength colony, feed early to stimulate breeding, add a chamber of empty combs on top, and put on surplus storage room long before they need it. They should build up very fast and store a large surplus without swarming. Contracting the entrance early keeps in the heat and helps breeding, but it should not be continued too long. Wide entrances should be given as soon as cool weather is over, and before warm weather comes on. It is generally understood that if the queen has plenty of empty comb to lay in, if the nurse bees have lots of babies to feed, the comb binders always have room for making new comb, and the honey gatherers have all the store combs they need, there will be no swarming. If you expand the room in the hive in advance of their needs, you may keep them at work storing surplus until it is too late for swarming. You will then have your surplus in honey instead in bees.

It is surprising how little attention bees sometimes require if given sufficient room. Two years ago I bought a lot of Italian mixed bees in frame hives. One of the best colonies was so cross that I did not want to put it in the back yard near the house with the others. I sold it to go on a farm. As I could not go up with it I crated it with two comb honey supers on top (56 4¼X4¼ boxes) with the wire netting on

top of them. The entrance was closed with one short and one long block. I advised the buyer to set the hive under a tree, put the cover on over the wire netting and pry off the small block early in the morning. About June 1st I wrote him to knock off the other block. This hive when shipped just in the beginning of apple bloom had several combs of brood with bees to cover and outside combs full of honey. All was open above to the comb honey sections. Late in August I went up and unerated the hive, took out 38 nicely filled pound sections of comb honey and the brood combs were two thirds filled with honey and the balance with brood. I do not think they swarmed that season. The honey was worth nearly the first cost of the colony. There were few bees in the vicinity but that was the worst season for honey production in this section in fifty years. They were let alone.

When I took the upper brood chamber of honey off some of my comb honey colonies this past season I put some on top very weak colonies with young queens. This store of honey above caused the colony to build up equal to any. When I took off the comb honey sections from the producing colonies I put these upper stories back where they came from to give them a reserve supply for the rest of the summer.

Thirty-five years ago I was using a single hive winter case that had four inches packing space around it, and a large chaff cushion over it. There was a slanting portico and the bees entered under the bottom of the stand. It had a very large entrance that could be contracted as desired. The body was made up of overlapping rims surmounted with a gable cover that turned back on a hinge like the cover of a trunk. These rims could be tiered up as high as necessary. The hive could stand a year without changing. It gave shade and ventilation in summer as well as protection in winter. It was not packed underneath which would have been better. The brood chamber could remain packed all the year, or not, as desired. It was factory made and the cost was low.

I believe that the Expert Apiarists at Washington have been giving us beekeepers most excellent advice lately and that we shall benefit by following it. It certainly has benefitted me. Their advice as regards packing hives for winter protection has been good, also, but I find that each beekeeper

is puzzling it out for himself to adapt this method to conditions and does not feel sure that he is doing the right thing. I believe that the thing most needed for them to get the benefit of this advice, in this section, is to have a standardized winter Hive, factory made that can be ordered like any supplies. A packing case that they will be sure is the right thing for the purpose.

THE CRISIS IN AMERICAN BEEKEEPING.

By G. H. CALE, Extension Apiculturist, U. S. D. A.

The rapid growth of the beekeeping industry, due to war conditions, makes it necessary to strengthen the efforts towards production to create a steady supply. The demand for honey has been and still is insistent, but it must be met almost immediately or the result will be rapidly decreasing demand, and a flooded market due to tardy efforts at production. What the results of such a situation would be is difficult to predict but it is sufficient to say that the industry would suffer.

At the beginning of the war markets were oversupplied and prices were low, but the steady decline in sugar stocks led to a rapid increase in the exportation of honey. The value of honey going from our ports jumped from $114,038, June 30, 1915, to $1,250,000 for a six-months' period ending January 1st, 1918. Before the war the average export was valued at $200,000.

Not only is it imperative that the beekeeper create a supply to insure a steady answer to this increased demand, but it is also important that he sell his honey with freedom from speculation and with a surer knowledge of the markets. It will be sometime before the world supply of sugar becomes normal and there is little likelihood that the prices for honey will approach pre-war levels soon, and it may be that they will never do so. The determining factor is largely the beekeeper himself.

The entrance of this country into the war was the beginning of great activities in beekeeping circles. The unfortunate lack of complete organization of the beekeepers of the country made it necessary that the industry's national

interests be cared for by the Office of Bee Culture of the Bureau of Entomology. During the first few weeks of the war more than 250,000 mimeographed letters were sent from this office to the beekeepers of the country, urging the necessity for an increased honey production. That great activity resulted among the beekeepers is evidenced by the fact that by June the incoming mail of the office had increased over 1,800 per cent., and the requests for help was staggering. It should be emphasized that much of the success of these efforts were due to men engaged in beekeeping activities throughout the states. Fine examples of leadership were disclosed in men like Professor Francis Jager of the University of Minnesota, who gave much of his time and money in assisting with the work. Through his suggestion a conference was held in Washington, which was attended by representatives of all the different beekeeping interests; producers, teachers, manufacturers, and journals. As a result an extensive program was formed for speeding up beekeeping which has been closely followed.

Considerable credit for the recent advances in beekeeping is due to the various Bureaus of the Department of Agriculture. Probably most conspicuous is the work of the Bureau of Markets, in furnishing regular semi-monthly crop reports. This same Bureau also aided in the formation of the Intermountain Honey Producers' Association, expedited freight movements of honey and supplies, and assisted in having express companies lift the embargo on the shipment of combless packages of bees. The Food Administration was of material assistance. It permitted shipments of lumber for supply manufacturing and granted beekeepers the privilege of buying sugar for feeding purposes. The Fuel Administration allowed supply factories to operate on fuelless days and secured movements of coal so that the work might continue uninterrupted.

The Bureau of Crop Estimates has continued its publication of crop estimates on honey so that the intelligent beekeeper may safely predict his future. The working of the Food and Drugs act as it affects honey is still administered by the Bureau of Chemistry, and as a result the public confidence in the purity of extracted honey, is constantly increas-

ing. A new regulation by the Post Office Department permits the shipment of live bees in special packages by Parcel Post, which has resulted in stabilizing and assuring the safe arrival of such shipments.

Probably the greatest advertising campaign ever attempted in the interests of honey producers, has been initiated without cost by the recommendations of the Office of Home Economics, and seconded by the various home economic workers throughout the States, for the use of honey in cooking. The result has been such a tremendous demand for honey that it became apparent that continuance of its advertisement was of little use as the supply was far too small to fill the demands. Unless the beekeepers themselves thoroughly realize this situation it is quite likely that the entire honey market will materially suffer. There can at no time be any fear of overproduction as long as this condition exists.

Realizing the necessity of getting the message of commercial and increased production across to the beekeepers as rapidly as possible, increased funds were obtained for the use of Office and 18 men were sent into the field. The army and commercial beekeeping have taken several, so that only nine are now left. The object of this work has been to organize beekeepers into cooperating units or associations, to inform beekeepers of the most advanced beekeeping practices, to directly stimulate the production of honey, and to help the beekeeping interests of the country in any possible way. It is hoped to finally have one man under cooperative appointment in each of the important beekeeping states of the union. During the past fiscal year this work was carried on in 35 states; hundreds of meetings were held, hundreds of bee clubs were organized; the beekeepers of the South were aided in transferring their bees to modern equipment and taught to operate them intelligently; and beekeepers engaged in the business on a commercial scale were helped in overcoming their difficulties.

The greatest obstacle to the success of this extension work is that of finding men sufficiently educated, and at the same time sufficiently experienced in practical phases of beekeeping, to be able to properly execute the tasks that extension work brings to them. Commercial beekeeping itself is such

an attractive field to such men that it is beyond the expectation of the Department to at all compete with it.

It is confidently expected that this work will continue and broaden, and it is seriously requested that all the interested beekeepers of the country render it every reasonable support. It is also hoped that each beekeeper will cheerfully shoulder his share of the task of increasing the production, and of boosting the industry. Otherwise it may fall from sheer inability to support itself.

REPORT

OF THE

MARYLAND STATE VEGETABLE GROWERS' ASSOCIATION

FIRST ANNUAL MEETING.

WEDNESDAY, DECEMBER 11th, at 10.30 A. M.

PRESIDENT JAMES S. SMITH: The meeting will come to order. Acting Secretary, E. C. Auchter, is unable to be present on account of sickness, so that his report will have to be deferred. Mr. W. R. Ballard will act as Secretary for this meeting. The first number on the program is the President's address.

PRESIDENT'S ANNUAL ADDRESS.

By JAMES S. SMITH, Brooklyn, Md.

Gentlemen:

It gives me great pleasure, as Chairman of the Vegetable Growers' Association of Maryland, to have the honor of calling this meeting to order; and it is a special pleasure and privilege since this meeting is connected with such a big event as the Southern Commercial Congress.

This is the first meeting of our Association since its inauguration, which took place in this building on December 18, 1917, not quite a year ago. As we all know, we have been engaged in the greatest war ever known in the history of the world—therefore, our young Association has not made the growth it would have made, had the conditions been more favorable. Every patriotic American has marched gallantly under the leadership of our great and worthy President, and I am glad to say we have accomplished the greatest victory ever known, but there is a great deal yet to be done in every

line of business for the future success of our Commonwealth, and I may say that the vegetable growers of Maryland have a large share in helping the cause along.

When the Vegetable Growers' Association was first brought to attention a few growers met in March 1917, at the Hotel Rennert upon invitation from Professor E. F. Stoddard of the Maryland State College. We talked over the prospects of organizing a Maryland Vegetable Growers' Association and some seemed to think it was a difficult task to get the vegetable growers interested in such an organization. Professor Stoddard insisted that there could be a successful organization and promised to use his best efforts in making it a success.

In organizing our Association we made this our object—from Article 11 of our Constitution:

"The object of this organization shall be to develop the trucking and market gardening industry of the State; to disseminate new and valuable information relating thereto; to encourage the exhibition of vegetable products, and to cooperate with all other agricultural interests and agencies in promoting the welfare of the State."

Professor Stoddard was made Secretary and Treasurer of our Association and he has used every effort to make our Association show up well at this meeting. On July 6, I received a letter from Professor Stoddard stating that he would be in Ithaca, New York, from June 3rd to October 1st to take advanced work at Cornell University; that he would visit some of the vegetable growing centers in that State and perhaps a field meeting of the Vegetable Growers' Association, and that he would pass on to our growers the best ideas he could gather, when he returned in the Fall. On October 16, I received a telegram stating that Professor Stoddard had died from pneumonia following an attack of Influenza. Professor Stoddard did practically all that has been done for the welfare of our Association and we feel very keenly the loss of our deceased Secretary and Treasurer, who had so many friends throughout the whole State.

We feel that the Vegetable Growers' Association is of too vital importance to disband, and while the beginning has been somewhat discouraging, I am confident there can be a

successful organization built up along the lines laid down in our object, providing the members give their loyal support.

PRESIDENT JAMES S. SMITH: The next number on the program is a paper on "The Wilt and Blight of Tomatoes," by Professor C. E. Temple, State Pathologist.

WILT AND BLIGHT OF TOMATOES.

By C. E. TEMPLE, Maryland State College.

Mr. President and Gentlemen:

For a number of years the Maryland State College has been conducting experiments looking to the control of the Fusarium wilt and the Septoria leaf blight of tomatoes. During the past two years the United States Department of Agriculture has been cooperating with this Institution in the control of these two diseases. Cooperative tests and experiments have been under way and will be continued according to the present plan. Both of these diseases are very prevalent in Maryland and they cause very great losses each year. The wilt is a root and stem disease. It attacks the roots and progresses upward through the stems, turning the infected parts black or brown inside. At first the foliage of the infected plant turns yellowish, and then begins to droop, finally the whole plant wilts and collapses. This attack may come at any time from the seedling stage until frost. In badly infected fields the plants usually die in August here in Maryland. The yield of such fields is, of course, much below the average for uninfected fields.

The leaf blight is a leaf disease that may attack other parts of the plant but its principal injury seems to be to the foliage. This disease produces small dead spots in the leaves, the lower leaves being usually the first to become infected and then the next ones above them and so on, until all of the leaves of the plant have become diseased. At the same time, the lower leaves die first, then the next ones and so on until the plant is practically defoliated, exposing the fruit to the hot sun. The injury caused by this disease is twofold: in the first place, the food that goes into the fruit is made mainly in the leaves and if the leaves are lost prematurely, the fruits do not develop normally. They are smaller, of paler

color and they are much inferior in flavor. In the second place, the leaves protect the fruits from the sun, so, when the plant is defoliated, there is great loss from "sun scald" to the fruit.

The Control of the Wilt.

The wilt organism, being an internal parasite, makes it evident that no amount of spraying can ever control the disease because the material cannot be applied to the organism. There is a method of control, however, that has worked very successfully. It is the breeding and selection of strains that withstand the attacks of the wilt. In 1912, the Maryland State College through its Prof. Norton began the selection of plants that resisted the wilt in very badly infected fields. These plants have been propagated from year to year, selecting for seed each year only the choicest and most resistant to the wilt so that now we have some varieties that are able to grow and produce a large crop of fruit even on badly infected soil. Two wilt-resistant selections, one from Stone and the other from Greater Baltimore, have been propagated quite extensively and during the past year approximately 1,000 acres of these two varieties were grown in Maryland. The value of this work can hardly be overestimated as the comparative yields of the wilt-resistant varieties and the commercial varieties on infected soil is very marked. In Dorchester County, the County Agent reports on 67 tests an increase of from 10 per cent. to 400 per cent. in favor of the wilt-resistant over the commercial varieties used as checks. In Caroline County 17 tests gave a yield of 3½ tons per acre for the commercial varieties and 4 1-10 tons per acre for the wilt-resistant in the same fields. This is an increase of 36 five-eights bushel baskets to the acre due entirely to the seed. In 1917, one strain of wilt-resistant Greater Baltimore produced seven tons per acre on sick soil, and in another field one strain of wilt-resistant Stone yielded on sick soil 290 five-eights bushel baskets per acre when the checks of commercial Stone in the same field yielded only 98 baskets per acre. The only difference in the treatment of the two was the difference in the seed. Out of 167 tests in 1918 only three reported a decrease in yield due to the wilt-resistant seed

and only eight reported the wilt-resistant as low in yield as the commercial seed. On the other hand, fourteen of the best results taken from these reports gave an average increase of 99 five-eights bushel baskets per acre.

Provision has been made for the production of the seed on a commercial basis so that any one may obtain the seed of the wilt-resistant varieties whenever desired. In my travels I have found two men who claim that they could have paid one hundred dollars per pound for wilt-resistant seed and by so doing could have made money over free commercial seed. In these two cases, it is very evident that the wilt has been playing havoc with the plants from commercial seed.

The work of breeding and selection is to be continued in order to further improve the strains already developed and to produce resistant strains of other popular varieties. In recent years a number of State Experiment Stations have begun the wilt-resistant work and the United States Department of Agricultural has already made much progress with Norton's selections and with new selections of its own. So much progress is being made in the control of this very serious disease of the tomato, that there will soon be very little excuse for much loss from the Fusarium wilt disease.

In addition to this, several of the growers have saved seed ranging from a few pounds to 40 or 50 pounds each. Then, too, this Institution is planning to distribute about 76 pounds of wilt-resistant seed during the present season. All of these sources of seed supply should make it very easy for any one in the State or even in the United States to obtain wilt-resistant stock, if they have the disease in their fields or in their gardens. If the wilt disease is present in the soil where the tomato is to be planted, there is no longer any question as to the value of the wilt-resistant stock for such places.

The Control of the Leaf Blight.

With us in Maryland the Septoria leaf blight is the most widely spread tomato disease. For many years not only our own Experiment Station but also the Experiment Stations of various States and the United States Department of Agriculture have been working on the control of this disease.

From present results the control of the disease seems to lie in the application of fungicides. Considerable work has been done in attempting to develop blight-resistant strains and varieties, but up to the present very little progress has been made with the possible exception of our wilt-resistant Stone known also by the name of "Norton." It is barely possible that strains may yet be developed as resistant to the leaf blight as those we now have are resistant to the wilt.

For several years different Stations have obtained on a small scale very promising results by applying Bordeaux mixtures but these results have not been uniformly good. We have been able to get good results one year and perhaps the next year very poor results were obtained. Then, too, a satisfactory method of applying the spray on a large scale has been lacking. It has been during only the past three years that the writer conceived the idea that the plants must be set wide enough between the rows, so that a large sprayer could be driven through the field without mechanical injury to the plants and fruits. By the old system of setting the plants 4x4 feet, we were unable to spray later than the last of July with a large sprayer, and this was not late enough in the season to give us maximum results. We have, therefore, established a distance of 6 feet between the rows, but we set the plants close enough in the row, so that approximately the same number of plants per acre is obtained as when they are set 4x4 feet. This is the first requisite in the spraying of tomatoes in the field on a large scale.

This system of setting the plants has a number of advantages that are not evident at first thought. A wide space between the rows enables the grower to cultivate the land later, thus enabling him to hold the moisture which is so essential to the tomato during the ripening period. It enables him to sow a cover crop whenever desired. In those sections where the wind may whip the plants about, the wind injury is not so great when the rows are wide and the plants are close together in the rows. In this case the plants tie themselves together, as it were, so that each row is a unit, whereas when they are checked 4x4 or 5x5 each plant is a unit and may be whipped about and injured greatly by the wind. The wide rows enable the pickers to get about with-

out so much injury to the vines and the fruits, and too, the fruits may be hauled out of the field without so much injury to the vines. All of these advantages are worth considering and some of our growers expect to use this system of planting regardless of whether or not they spray. Then, too, the wide system of planting does not seem to affect the yield as we have obtained as much as 11 tons per acre when the plants were set 3x6. However, tests are under way to determine the effect of this method of setting plants upon the yield regardless of spraying.

We use traction and also power sprayers which cover three rows at a time with three nozzles playing on each row. One nozzle is placed above each row and one nozzle at each side of each row. One nozzle of this pair of nozzles is directed forward and upward into the row and the other backward and upward into the row so that under a pressure of 150 pounds, there is considerable twisting of the plant, making it possible to cover a larger percentage of the under surface of the foliage than when the side nozzles are directly opposite each other. This sprayer covers the field very rapidly. We have sprayed as much as 17 acres in an afternoon. This part of the problem at least is, therefore, fairly well solved.

We have used a large number of formulas, both liquid and dust sprays, but of all this work two formulas stand out as being the most promising. One of these is Bordeaux mixture 4-4-50, the other is Bordeaux soap 4-2-3-50 in which case the 3 is composed of rosin fish oil soap. The Bordeaux is made first, then the soap is dissolved in hot water and mixed with the Bordeaux. The soap gives the Bordeaux better sticking and spreading qualities. We are unable at present even with our extensive tests of approximately 200 acres during the past two years to say which of these formulas is the best. Both of them have usually given us very good results. They have been good enough, at least, to demonstrate that practically half of the fruit on the fields sprayed, judged from the checks, would have ben lost by the ravages of the leaf blight disease. In some cases the spraying practically doubled the yield even though the control was not complete. It was not unusual at all to get an in-

crease of from 40 per cent. to 60 per cent. due to four applications.

With copper sulphate now at 10 cents per pound, lime at ½ cent per pound and the soap at 5 cents per pound, fifty gallons of the spray would cost only 42 cents for the straight Bordeaux, and 56 cents for the Bordeaux Soap. From 50 to 100 gallons is applied per acre so it will be readily seen that the expense of spraying, with proper equipment, is not excessive at all. 54 acres were used in tests to determine the number of applications to apply in the control of the disease. Each field, as in all cases, is divided into plots of one acre or more, but in this case all of the plots received at least one application. The results showed quite conclusively that there was an increase with each application up to and including five applications. No plot received more than five applications.

The experimental work in cooperation with the United States Department of Agriculture is to be continued in Maryland, and other States also are working on the same problems to discover the missing links in the perfect control of the tomato leaf blight. Until farther progress is made in the control of the leaf blight, tomato growers on the blight infected farms should investigate the possibilities for increasing their yields by spraying. Either formula given above may be used but it is necessary to use a good sprayer that will develop enough pressure to thoroughly cover the plants and that will deliver about seventy-five to one hundred gallons per acre. The first application is made three to four weeks after the plants are set and subsequent applications are made every ten to fourteen days until five applications are made. When insects such as bugs, aphis and tomato worms are present, we apply insecticides along with the fungicides.

A MEMBER: Have you more than one variety of wilt resistant tomato?

MR. C. E. TEMPLE: Two. Stone and Greater Baltimore. We are trying to get others.

MR. T. H. WHITE: Why have so many varieties?

MR. C. E. TEMPLE: Our two varieties are both late, we need resistant early varieties as well. What we really need

is something as early as Chalks Early Jewel or Bonny Best, and a medium early such as Delaware Beauty or Redhead.

MR. LECATO: Mr. Temple, does not Dr. Pritchett have two varieties for distribution Is not Marvel one of these?

MR. C. E. TEMPLE: He has three varieties, Marvel, selected from Marvel of the market; Columbia and Arlington, both selected from Greater Baltimore. Wilt resistant strains require spraying for blight the same as commercial strains and better results are obtained when a double application is applied at each spraying. In which case the sprayer crossing the field returns over the same rows.

MR. T. H. WHITE: Why put more spray on the row?

MR. C. E. TEMPLE: Where we go back over the row we get better results.

MR. T. H. WHITE: Why not use 8-8-50 instead of going over the row, so many times?

MR. W. F ALLEN: In going the opposite way, the second spray covers the plants better than does a larger quantity at one application. We could not get in on our ground in the field but we sprayed thoroughly in the beds, so that the plants looked as blue as indigo.

MR. C. E. TEMPLE: Yes, spraying in the bed gives very good results.

A MEMBER: Do you have any trouble with the big tobacco worm?

MR. C. E. TEMPLE: It does not usually give much trouble. All we would need to do would be to add arsenate of lead to our spray. They apparently do not like Bordeaux and soap mixtures, since they eat the check plots in our experiments in preference.

PRESIDENT JAMES S. SMITH: We will next have a paper on "Cabbage" by Mr. T. H. White, of the State Experiment Station.

CABBAGE.

By THOMAS H. WHITE, Maryland Experiment Station.

Mr. President and Gentlemen:

When Dr. Symons asked me to come before this association and talk about cabbage, I began at once to wonder what I could say about cabbage that would be interesting to such

a gathering of experienced cabbage growers as I knew would be at this meeting. Upon thinking it over, it seemed to me that it would be better to discuss some of the more important points in the culture, and also some of the troubles we have to contend with, and their causes as far as known.

As many of you are aware I have been connected with the vegetable department of the Agricultural Experiment Station for more than twenty years. This has given me an opportunity to observe and to speculate upon a good many problems pertaining to vegetable culture. As you know, the main work of the Experiment Stations is to study the reasons why we get certain results, rather than simply how to grow large crops, and market them as do you gentlemen. Why, then, has been the constant thought uppermost in my mind for the past twenty years.

With regard to cabbage my interest has been more with the late crop than with the early one. This is not because it is any more important for Maryland than the early crop but because it is more troublesome to grow. Given good soil and good plants the early crop is almost assured, but the same is not true of the late crop. Cabbage being native to some of the cooler parts of Europe adjacent to the sea coasts, it can readily be seen that it is very much out of its ideal location when grown in Maryland during the summer months. But when planted in the Fall of the year, or very early in the Spring, the early or short season varieties have a growing period under cool conditions long enough to mature properly.

One of the first problems that claimed my attention was the reason why late cabbage does not grow well on rich, well manured land. It was noticed one season that late flat Dutch varieties planted on a piece of land that had been used as a garden and well manured made a very poor growth. The month of August was rainy, but the cabbage would wilt down and look worse after a good rain than they did before. Very few heads were harvested from this patch. One end of this piece of land was a very much poorer type of soil than the other, it being a stiff, red clay. It was from this end that the best cabbage was cut. This led to some inquiry into the matter and it was found that the truck gardeners in the

vicinity of Washington who annually applied large amounts of manure to their soil were unable to grow the ordinary flat Dutch varieties of cabbage but could get a fair crop of the curled Savoy. It was also found that the great bulk of cabbage put on the Washington market in the Fall was grown some ten or fifteen miles from the city on land that was quite poor in comparison with the garden land. It was also found that very little stable manure had been used on these farms and the main dependance for producing the crop of cabbage was commercial fertilizer. This fertilizer was generally home mixed and was made up with acid rock, tankage, and kainit or muriate or potash. The soil on these farms was generally a light clay loam underlaid with clay. The same soil produced fair crops of corn, hay and wheat.

When planted in cabbage the best results were usually obtained when a sod field was used. But good crops of cabbage were often secured when corn had been the crop the previous year. Some times the corn stubble would be seeded to rye and the rye turned under for the cabbage. This being the case, it seemed important to plan some experiments that would give some idea as to the reason or reasons why this should be so. In order to be sure that the poorer field soils would produce better cabbage than the rich garden soil a piece of sod land was selected and prepared for late cabbage. At the same time a piece of garden soil was prepared and planted. There was a good crop secured from the sod field, but a very poor one from the rich garden soil.

Observations were made through the summer, and it was noticed that during rainy spells in August the plants on the rich land grew very poorly, wilting badly when the sun came out after heavy rains the previous day. This did not occur on the sod soil, and the plants made a steady growth. Now this being so, why was it? What was the reason? The first idea that occurred to me was that the rich garden soil was over supplied with some of the soluble fertilizing salts and that if other chemicals were applied, it might correct this condition. Lime and potash in varying amounts were applied on different plots and some plots were left untreated. Nothing that was put on seemed to do any good. The plants started off well but as soon as the heavy rains came on in

July and August they wilted and died. If it was too much water that was causing the trouble, it would seem that could be remedied by setting the plants on ridges. So the following year one-half the plot of ground was prepared so that the plants were set and cultivated on ridges. The other part of the plot was left flat. The season was again wet and while the plants grew better on the ridges than on the level the crop was far from being satisfactory. So far then, these several treatments had failed to improve the conditions, so that even a fair crop of cabbage could be secured from it. In the meantime good cabbage was being grown on other parts of the farm on quite similar soil and drainage conditions, except that it was sod land from which mixed hay had been cut. Thinking that some other crop of a grass like nature might take something from the soil and so leave it in a better condition for cabbage, I sowed wheat on half of the plot. This made a splendid growth and was harvested when ripe on July 6. The piece was at once prepared for cabbage and the plants were set on July 12. This time nine different varieties were set. August and early September of this year were dry. For the first time in four years some good heads were gathered from this piece of land. The wheat did harm rather than good as there were 55 heads less on the plot upon which the wheat was grown. Some of the varieties did much better than others, which seemed to indicate, that they were better able to withstand unsuitable conditions. While trying to find out the cause of the trouble on this rich garden soil, no special attempt was made at first to study the diseases affecting the cabbage. In common with many other cabbage growers, I had always thought that diseases were the result of poor conditions rather than the cause of them. (As a matter of fact, as I believe now, they go together). But upon looking into the matter, I found that there were present at least three district diseases. These were Black Rot, Black Leg or Root Rot and Yellows. The Black Rot and Yellows seemed to be worse in dry seasons, and the Black Leg or Root Rot caused the most injury in rainy or wet seasons. The Black Leg seems to be the most insidious disease of the three as it starts in the root and often does not show the result of its work until the entire plant dies. Some of the plants at-

tacked do not die because only a portion of the root is destroyed, but the growth made is very poor and if a new root system is formed the cabbage are undersized. Black Rot shows in the leaves first and is usually followed by a soft rot that causes the head and stem to decay. The yellows disease enters the stem and working up the stem causes the leaves first to turn yellow and eventually die.

It was noticed that some of the varieties planted on this rich, moist piece of land did not suffer from the diseases as badly as some others. These varieties which were seemingly resistant to disease were of a somewhat leafy character, and usually with a good deal of color, reddish or blue in the leaves and stems. The leaves were also generally fringed and crinkled. Some of the varieties of this type which were quite resistant and did well were named Landreths Market Gardiners Large Late Flat Dutch, Autumn King, Volga, Houser, and the curled Savoy. This disease resistant character was so apparent that it seemed worth while to select some good heads and put them away for seed. This was done and the stock from this first selection in 1906 has been perpetuated at the Experiment Station until the present time. This seed stock was taken from the variety Landreths Market Gardeners Large Late Flat Dutch. It was planned to secure some new stock each year from the Landreth firm to test with it. This has been done but after the year following the one in which our selection was made, the same type was not supplied under this name. This selection continued to give good results until the season of 1915, and then the Black Leg caused considerable loss. This led to some inquiry as to why this disease should all at once appear and become virulent. The many steps in this investigation are quite interesting but would take too much time to give in detail here. Investigations, however, seem to show very clearly that this disease is carried on the seed and starts its work in the seed bed. The infection of the plants is brought about by spores which are carried on the seed. Or rather it seems they are under the seed coat or skin. These spores are in bunches in a case or covering that keeps them together until the weather is warm and moist enough for them to grow. They then proceed to germinate and live on the roots and stems of the

young cabbage plants. Other spores are formed and spread to other plants which came from seeds that may not have originally carried them. One of simplest ways to infect a whole field is to pull the plants when they and the soil are wet and bunch them together in box, basket or wheelbarrow. The warm moist condition of plants bunched together is just right for the spread of the spores from one plant to another. In this way, a large number of the plants become inoculated and if the weather is wet after they are set in the field the fungus goes to work on the roots and stem and kills and injures many. There are two or three ways by which this root rot trouble can be modified or controlled. The first is by soaking the seed in water heated to 138 degrees Fah. for ten minutes. After which they should be spread and dried. Next is by sowing thinly, so that if some of the seeds have these spores on them, they will not be as easily communicated to the others. Also by pulling the plants when they are fairly dry and keeping them separated as much as possible, so that if one plant is affected it will not be communicated to the others

Fertilizers for cabbage as well as other vegetables have always been of considerable interest and I have made many investigations along that line. It is reasonable to suppose that a properly balanced food is as necessary to the best growth of the plant as it to the animal. There is one great difference, however, in feeding plants which are growing in the soil of the open field and that is that the plant gets from the soil, many things that are an unknown quantity, while the animal that is fed in the trough or manger must eat what is fed to it. In general we know that any kind of animal manures will grow good crops and now after many years of experimenting, we recommend for a general fertilizer one that contains the elements nitrogen, phosphorus, and potash in about the same proportion as they occur in stable manure. Of course, it is not often that mixed goods are put up so that this proportion is maintained, but the addition of some nitrate of soda either to the mixture or later as a topdressing will cut down the phosphoric acid which is usually in excess in commercial fertilizer.

Some experiments were conducted a few years ago with an idea of getting information along this line. Two lots of goods were mixed on having an analysis of nitrogen 8 to 9 per cent., phosphoric acid 4 to 5 per cent., and potash 6 to 7 per cent. The other was nitrogen 2 to 3 per cent., phosphoric acid 7 to 8 per cent., potash 1 to 2 per cent. In ordinary barn-yard manure the phosphoric acid content is low, being only about half of either the nitrogen or potash. The first formula then comes nearest to the composition of the barn-yard manure. At the rate the fertilizer was applied in the experiment the first formula cost $10 more per acre than the second. The experiments were conducted on a piece of sod land that was fairly fertile. The top of cabbage harvested was slightly heavier from the cheaper fertilizer. The next year a piece of sod land was used that was not as fertile as the piece used the previous season. This time the higher priced fertilizer gave a net increase of $31 per acre over the other. So, after all it depends very much upon how fertile the soil is when considering what to apply. Cabbage however is largely leaves and as these require considerable nitrogen it is better to supply enough of this element.

The late cabbage growers located near Washington, usually make their plant beds in the open field on rather poor soil which is enriched for the plants by a heavy application of commercial fertilizer. The object is to produce a vigorous but tough plant that will stand the sun when transplanted. It was thought that fertilizers with varying amounts of nitrogen used on the plant beds might have an effect that would influence the yield of cabbage in the field. Therefore four different mixtures were applied to four different beds. Bed 1, received a complete fertilizer; bed 2, phosphoric acid and potash; bed 3, phosphoric acid; and bed 4, nitrogen in the form of nitrate of soda. This experiment was tried for two seasons. The best yields each season were obtained from the plants from the beds receiving nitrate of soda. This being so continue to use and advocate the application to the plant beds of a fertilizer that contains a high per centage of nitrogen or else three to four hundred pounds of nitrate of soda per acre. Nitrate of soda is especially valuable when applied early to the spring crop. The nitrogen in the nitrate

of soda is ready to be used by the plant as soon as there is water enough to dissolve it. The organic forms of nitrogen have to be changed by the nitrifying bacteria that live in the soil and which at this time of year are not very active. For this reason the nitrate of soda will give better results in the very early spring, when the soil is cool. Later in the summer as the soil warms up the nitrifiers become more active and can change the soil compounds so that they become available to the plants. With the exception of the nitrate of soda on the early crop and the seed beds it is not often that it is advisable or necessary to apply any one of the fertilizing elements singly. Although sometimes acid phosphate alone, at the rate of four to five hundred pounds per acre on a piece of well manured sod land may be used with good results.

Land that has been well manured in previous years should always be selected for the fall or the early spring planted crop. The organic matter of the manure seems to have a good effect on the soil so that the drainage is better and makes a condition that helps to prevent the plants from being heaved out when fall set. Nitrate of soda will be found of benefit to this crop, and, if only one application is made, it should be put on early. When the first cultivation is given is the time for the first application. A later application can be made when the plants are about half grown. Two to three hundred pounds per acre distributed close around the stems of the plants is about all the plants would profitably use.

With regard to the fall set plants heaving, it occurred to me last year that different method of planting might prevent this. It seems that heaving is caused by the soil, when very wet, becoming frozen around the plant a couple of inches or so deep. The water when frozen into ice expands and lifts the soil and plant with it. As the ground thaws the soil settles slowly back and leaves the plant torn loose from the soil and the stem exposed to the next severe freezing. It seemed to me, that if the plants were layed down in a furrow and the soil put on top of the stem and root, that if the frost heaved the plants and soil together it would not draw the plants out of the soil and so when the thaw came the soil and plant would all settle back together. At the same time I thought it would be well to try some on the north

side of ridges. The old idea that there would be less freezing and thawing when set on the north side than on the south side of the ridge being still prevalent.

For those set in the furrows a small turning plow was used which made a furrow about three inches deep, the plants were laid down in the furrow one foot apart. A hoe full of soil was placed on the stem of the plant so that only the bunch of leaves was exposed. Some notes taken on January 19, 1916, show that those planted on the north side of the ridges heaved badly, and some were thrown entirely out of the ground. Those on the south side heaved also but not as much as those on the north side. Those in the furrow were not heaved out at all. The leaves had suffered severely from frost, but all the stems were still well covered

After the plants had started growing well in the spring a count of the plants in the three rows in each lot was made. There were 120 plants set in each row. The spring count showed that they were growing well, in the lot set in the furrows—78, 55, 99, or a total for the three rows of 232. Those set on north side of ridge—90, 84, 80, or a total of 250. Those set on the south side of ridge—119, 117, 120, or a total of 356 Stated in percentages there were growing from those set in the furrow 64 per cent., those set on the north side 69 per cent.; and those set on the south side 99 per cent. This is clearly in favor of the south side of ridges. In connection with this experiment a count was also made of the plants that threw up a flower stalk and did not head. It was thought perhaps the different methods of planting might have had some relation to this. The results, however, do not indicate that these had any effect. The percentage of "seeders" on the plants in the furrows was 40 per cent., on the north side of ridge 42 per cent., and on the south side of ridge 36 per cent. Just what caused a greater percentage of dead plants in the furrows was not determined. Some further experiments may have determined this point but as those set on the south side of the furrow did so much better it was not thought worth while to experiment further.

Cabbage Seed.

It seems to me that the source of the seed we use or rather, perhaps, the kind of seed we use is as important or perhaps more important than any other point connected with cabbage culture. At present I am sure the seeds we get are not only very much mixed so that they are not true to name, but they are also inoculated with the germs of cabbage diseases. By giving this seed the formalin and hot water treatment in a measure these diseases can be prevented from developing, but there is no treatment that will enable us to get a good Jersey Wakefield from a seed that has been impregnated with Flat Dutch pollen or with any other variety of pollen. I do not believe growers generally are aware of the loss that comes from seed of mixed types. One gardener I was talking with said "Yes but they all headed well." But when I pointed out that all the time the later types were taking to make a head the piece of land they occupied was producing nothing, he saw where the loss was. If an early cabbage crop could all be cut within ten days after they commenced to head, it would be a great advantage not only because of the extra price obtained but also because the land would be available for some other crop.

Why do the strains of cabbage seed have so little uniformity in heading? While there are probably some other reasons, I believe the principal one is the crossing of the seed plants. The seed used to make the experiments for the different methods of setting was secured from reputable seedsmen as Early Jersey Wakefield. Along with the setting experiment we wished to observe whether the running to seed before heading was an hereditary condition, whether the next generation would inherit the trouble, or perhaps I should say tendency. So instead of pulling the seeders out we allowed them to make seed and ripen. Twenty-five individuals were saved and the seed was rubbed out and kept in separate packages, this was sown in the fall of 1917. A survey of the patch from which the seed was saved indicated that it was very much mixed as all types from Wakefield to Flat Dutch could be seen in it. Of course, the crop we got was the same. The notes show however, that each individual produced a large

percentage of individuals of one type indicating that they, at least, were quite closely pollinated, but there were few rows that were alike. There were many types from the small Burpee's Baseball to the Hedersons Succession. There were some that looked very much like the old Early York. Also some with curled leaves like the Savoy. There were very few seeders nearly half of them being entirely free from any signs of flower stalks. The highest percentage of seed stalks, 16 per cent., was on number five. The average for the lot was a little over two per cent. From this it would appear that the tendency to run to seed before making a head is not inherited. So we are still inclined to think that the "Seeders" are due to the amount of development of the plants before they are set in the fall. The plants set the previous season which had 40 per cent. of seeders were much larger when set than those which had the small average of a little over 2 per cent. There was another interesting point in connection with this work which I think will be worth while to investigate and that is the hardiness of the individual strains, varieties or whatever we call them. This lot of individuals certainly showed great variation in their hardiness. The best lots when counted in the spring had from 70 per cent. to 85 per cent. of a stand while some of the lots had as low as 13 per cent. The plants were set on December 4th and severe freezing weather started and continued a few days after they were set. They were set by four different men, and it is probable that some rows were not set as well as others. In the same patch, however, we set a row of Copenhagen market and not one of these stood through the winter. If this variety is tender, a cross between that and Jersey Wakefield would in all probability affect the hardiness of the Wakefield.

It would seem therefore that it is of great importance that our seed stocks be kept pure. Wisconsin has found a strain of Danish Ballhead that is resistant to the yellows. For this reason it is probable that the same thing can be done with the Wakefield and Succession which are injured by this trouble, when grown in the early cabbage growing sections.

On a trip north the past summer I spent a few hours in that section of Long Island where a large quantity of cabbage seed is produced. The seed is grown by small growers under

NEW YORK
VERMONT
NEW HAMPSHIRE
MASS.
BOSTON
ALBANY
HARTFORD
CONN.
PROVIDENCE
R.I.
NEW HAVEN
PENNSYLVANIA
NEW JERSEY
NEW YORK
ATLANTIC OCEAN
HARRISBURG
TRENTON
Philadelphia
Atlantic City
MARYLAND
DOVER
DEL
WEST VIRGINIA
WASHINGTON
ANNAPOLIS
CHESAPEAKE BAY
RICHMOND
VIRGINIA
Newport News
Norfolk
NORTH CAROLINA
RALEIGH
100
150
200
250
300
350
400
50
The Fourteen million urban population within 400 miles of Baltimore furnishes an outlet for Marylands FARM PRODUCTS
Brilliant Sign Co.

contract with some larger grower and dealer. F. M. Lupton and Son, are growers and dealers near Mattituck. They supply the stock seed to the small growers and the growers produce the seed at a set price per pound. I was there just at harvest time and tried to buy a small quantity of seed from one grower who had some very nice looking seed. "No," he said, "I cannot. My seed is all grown for Mr. Lupton and the only way you can get any is through him." He also told me that there was a good deal of Jersey Wakefield seed grown there for the Henderson firm. "Yes," he said, "they send inspectors down here once or twice while the crop is growing to look it over and see that it is all right. For the past year or two they have been so particular that all the cabbage must be headed before it can be put away for seed." This seed they sell at least produce a head. Whether they do anything in the line of selection or not I did not learn. Young Mr. Lupton told me that they had tried individual head selection and were not able to keep their stock up to the standard as well as they could from the mass selection. He told me that they were growing now about twenty-eight varieties. He also said that all of Long Island would not produce good cabbage seed. A section of about 14 miles in the neighborhood of Mattituck was about all the territory on the island which was suitable. So you can readily see that unless great care is taken, it would be comparatively easy to get the varieties mixed. The growing of cabbage seed itself, while it entails a good deal of labor, is not any more difficult than other gardening operations. As practiced on Long Island, the seed is sown the last of May or early in June. Good cultivation is given and the plants induced to make all possible growth. In November the heads are pulled and set away three abreast in trenches and covered with soil. In the spring deep furrows are prepared and the heads are laid singly in these trenches about three feet apart, after the planting is done the heads are split with a knife. The cultivation consists in keep down weeds and hilling up the earth around the stems. Laying the heads down in trenches and afterwards hilling them is to give support to the seed stalk. About the middle of July the seed is ripe. The stalks are cut off close to the ground and are laid across the ridges

which are in many cases a foot or more high. The ridges are also an advantage at this time for if rains should occur the furrows carry off the water and the seed stalks soon dry off. The seed is threshed out in the field. The bed of a rather broad wagon is covered with a sheet and above this is constructed a rack with a wire bottom As the pods are flailed the seed falls on the sheet below. It is afterwards spread on the floor of the barn until thoroughly dry so that the bits of stem chaff can be fanned out. This past year the growers were getting one dollar per pound for this seed. The yield, of course, varies but one grower said that as much as eleven hundred pounds had been grown on one acre.

How can cabbage growers obtain better bred seed? This is a question that has occupied my attention for some time. I believe, myself, it would help immensely if each grower would make it his business to write to his seedsman and tell him just how lacking in uniformity the crop was and suggest that a little more careful selection would make that seed worth a dollar a pound more to him. If we could get Wakefield cabbage that would head so uniformily that the crop could all be cut in two weeks, we could afford to pay five dollars more per pound for the seed. Still another way to help would be stop changing from one seedsman to another in hope of getting better seed. Most of the cabbage seed is grown on Long Island anyway, and one lot is mixed about as badly as any other. We could grow our own cabbage seed but there would always be the danger of kale or some other cabbage variety getting mixed with it.

I have been hoping to get some cabbage seed growing started in our own state. This I am sure can be more easily accomplished with the late than with the early varieties because the early varieties are not adapted to our summer conditions. For this reason we would be unable to use the headed stock for seed. However, by having some proved stock we could sow the seed early enough in the fall so that all the plants would go to seed the following spring. We have been making some inquiry into the adaptability of some of the small islands in the Chesapeake Bay and I want to look more closely into it this summer. For cabbage seed growing the moist air that usually prevails near large bodies

of water seems to be of especial value in promoting the growth of cabbage. If we will, and we can, cut down varieties to four or five and then grow each variety on a separate island, we could get improved stock. Mr. Lupton of Long Island said that if we could only work out some plan by which cabbage seed could be successfully grown in this State, they would be glad to take it up. He said they had tried it on Mr. Anthonys' place near Chestertown but could not make it pay as a commercial proposition. Regarding varieties it seems to me that there are entirely too many. From my observation the only excuse for them is from the seedsmen's end. Premium, Choice, Selected or Private Stock is tacked on to a variety apparently at the whim of the firm selling it. It is rare that it is any better than any other. It is possible that the firm may at first have made some selection that appeared to be an improvement but growing the stock in close proximity to other strains would soon affect its purity. About six varieties would be enough from the market growers standpoint. These are Early Jersey Wakefield, Copenhagen Market, Succession, two types of Flat Dutch one the light green leaved type, the purest one I have seen for some time being Stein's Flat Dutch, and the other the dark green, reddish leaved type which is represented by autumn Giant. Then, of course, there is the Savoy which is distinct of especial value. With only six varieties to deal with the seed growing proposition would be simplified immensely. Even on Long Island large enough areas could be set with one type so that the central blocks could be used for seed stock and would then be fairly pure as the wind and insects would not be likely to cause much mixing within blocks.

Of the varieties mentioned the Jersey Wakefield would be the variety for sowing in September for wintering over and also for early sowing in the spring. The Copenhagen Market and Succession sowed at the same time would follow it. Succession is also good for late summer. Stein's Flat Dutch or some other one of the same type would suit the fall and early winter, and the Autumn Giant, being very hardy, would be suitable for winter storage in the open ground.

MR. J. B. S. NORTON: Are these six varieties recommended only for Maryland or for the entire country

MR. T. H. WHITE: For Maryland and for the entire country as well.

MR. A. M. TODD: Could we grow the early cabbage seed?

MR. T. H. WHITE: Yes, if you kept it separate.

MR. A. M. TODD: Can well selected heads be kept over?

MR. T. H. WHITE: We are trying to carry the heads over in the cold frame. The use of "seeders" is also being tested.

REPORT OF EXPERIMENTAL WORK WITH VEGETABLES FOR 1918.

By T. H. WHITE, Maryland Experiment Station.

Mr. President and Gentlemen:

The past season has been entirely too dry for the Irish potato crop but there seemed to be sufficient moisture for the sweet potatoes. Tomatoes generally gave a poor yield. The early part of the blooming season was suitable but later the weather became exceedingly hot and dry and the blossoms failed to set. It takes about two months from the blossoms to the ripe fruit. So if there are few tomatoes to pick in September, we must go back two months to look for the cause. July of this year, especially the early part was extremely dry. Last year there was plenty of rain during July, especially early, and the tomatoes bore fruit all of September and into the middle of October. Late potatoes came up well this year presumably because the soil in July was moist but not wet.

Regarding some of the experimental projects with vegetables at the experiment station which you may be interested in. I might say that of the original 300 white McCormick seedlings in 1917 we have grown 100. These will be weeded out still more next year. All of those that had good strong vines and did not suffer from tip-burn and also all of those which yielded a good crop will be tried again.

With the experiment in fertility where manure is used on one set of plots and fertilizers on the other, the early garden peas did best on the manure plots, but the White McCormick potatoes following gave as large a yield on the plots receiving fertilizer.

The experimental plot where rye was sowed after tomatoes last year and plowed down for late potatoes this year, showed

up slightly poorer than the check plot upon which no rye was grown.

The set of plots which were laid off to test the difference in the value of ridging, sowing to rye, or laying bare through the winter was slightly in favor of the plot left bare, with the rye plot next.

The vegetable work in Garrett County along the lines of producing such cool weather crops as garden peas, lettuce, cauliflower, etc., during August and September shows that this can be done and simply needs to be developed.

With tomatoes we found that the progeny of the first generation cross did give a better yield than either parent. Seed from these crosses has been saved and will be tried again next year to see if this can be carried along by saving seed from the hybrids.

The canteloupes did not blight badly this year especially if the patch was located some distance from where melons had been grown in previous years.

Regarding the value of lime, wood ashes, or raw-bone and nitrate of soda, or acid phosphate and tankage for spinach, the best plots were the lime and wood ashes, the next the bone and nitrate of soda. The spinach disease was worse on the check plot. This fall, half of each plot was heavily manured with barnyard manure. These halves are better than those receiving the chemicals but the lime and wood ashes plots still look the best.

Again this year the same as last the McCormick potatoes of two ounces in size planted whole produced slightly better than large size ones cut into two ounce pieces.

Also this year, the same as last, the plain acid phosphate applied to late potatoes on good land made a larger gain than did some of the fertilizer containing nitrogen.

A MEMBER: How high did you allow the rye to grow before you turned it down

MR. T. H. WHITE: About a foot. This work will be continued.

A MEMBER: We have plowed down rye for potatoes and our neighbors have done the same but I think we allowed it to get too high.

MR. T. H. WHITE: Many use rye but its value needs to be tested out more carefully.

A MEMBER: Have you used vetch with rye?

MR. T. H. WHITE: No, I have not. It is hard to get a stand and it kills out in winter. I have a series of plots started in which fertilizers and manures of equal value are used to see how much of each it is necessary to apply to keep trucking soils in a productive condition.

PRESIDENT JAMES S. SMITH: Our next subject is "The Outlook for Trucking in Maryland." The discussion will be led by Mr. A. M. Todd.

THE OUTLOOK FOR TRUCKING IN MARYLAND.

By A. M. TODD, Sparrows Point, Md.

Mr. President and Gentlemen:

The outlook for trucking in Maryland from the standpoint of location, markets and transportation is better than that in any other State. We have good roads, good railroads and good boat lines both north and south. Baltimore is a good market for the fancy trade for shipping and the packer's line. The shippers have been handicapped on account of the war, and if it had not been for the packers, it would have been hard going. The packers have handled much of the poorer grades. As soon as transportation returns to normal, the shippers will become active again and tend to strengthen the market. We are well situated on the whole for labor since Baltimore is an immigration port and most of these emigrants stay within the State. The war has interfered to some extent with labor conditions but considerable improvement may be expected during the coming year. Some of the factories have shut down and this has released considerable labor.

A MEMBER: The packer takes the stuff but he tells you what you are to get for it.

MR. A. M. TODD: That is where the Association can be of help.

A MEMBER: Our growers contracted tomatoes at $1.00 per bushel but the price dropped so they cut us down on the quality. We could not leave them because we could not get

more in the market. As soon as the shippers come back the packers will be a great asset.

MR. T. H. WHITE: At the Experiment Station we do not get a very good line on the market but I do know that in Washington the worst trouble is the cut throat competition of the growers themselves. The commission men save the situation by buying up the surplus and shipping it to Pittsburg and thus brace the market. The large growers should get together to stabilize conditions. There are little grown crops such as eggplant, peppers, etc., which can be grown on the Eastern Shore as easily as in New Jersey, Then, too, many of the cool climate crops such as cauliflower, lettuce, etc., could be grown in Garrett County during the summer and the Association should foster the development of these new industries. Maryland is really a wonderful State from the trucking standpoint.

MR. E. E. NOCK: Trucking is as complicated as the Peace Commission. One point which needs developing is the establishment of standard grades. On the Shore not enough is done or said as to getting such grades. We have done a good deal in Produce Exchanges but each station has a different system of grading and it is difficult to get a uniform grade over the State. One way to solve the problem would be to organize as have the California fruit growers. There the growers carry their products to the station and the Association has expert graders to grade it.

Our farmers do not give enough attention to the marketing end. In an investigation of 300 manufacturing concerns it was found that from ⅓ to ½ of the profits was used for selling the products. Our growers ought to organize to control distribution so as to prevent a glut in the markets. They ought to know how much of each crop each market will take and how much is on the way to each market. We need a national organization. We ought to get better prices for our products. We get now on an average only 33⅓ cents of the consumer's dollar. I wish the problem could be solved but I have no plan to recommend. There is not the proper balance when the growers work from 11 to 14 hours per day and industrial and government workers put in only 8 hours.

MR. T. H. WHITE: If you know what you want, you must

go at it from the ground up rather than from the top down. The reason the War Garden Contest was not a greater success is because there was not enough interest on the part of the growers themselves to make competition. The interest must come from the growers, then the government will help.

MR. A. M. TODD: We must keep the Vegetable Growers' Association going.

MR. E. E. NOCK: I have been growing truck for 25 years and I have never heard any speaker talk on growing Sweet Potatoes. I see by the program that we have the subject "Raising Sweet Potatoes for Profits," but I understand Mr. Ridgway has just recently died. This is a very important crop in Anne Arundel County and on the Eastern Shore and Dr. Johnson of the Virginia Trucking Station is the only one I have ever heard say anything about it. The fruit growers get money for the investigation of fruit diseases but the Sweet Potato crop is worth more than all the fruit in the State.

PRESIDENT JAMES S. SMITH: It is no trouble to grow Sweet potatoes and other crops need more attention. We can't grow our own seed, however—very few know how to grow slip seed.

Our Association is broad enough to consider all the problems relating to truck growing.

I have been a grower all my life but I don't know very much about it yet. When problems come up I have to go for help. Conditions have been changing rapidly. Now we can bring in twice as big a load as by team in 30 minutes. Two loads a day is all we could haul by team and sometimes a single trip would take 10 hours. The conditions on each farm are widely different. The majority of truckers are so jealous that they will not tell their secrets. We must get together and develop mutual interest, grow better stuff and grade better. I have seen the packers pay three prices within an hour. I have seen tomatoes not fit for a hog pen arrive in the market. They ought to be left at home. It is hard to put a price on perishable products. Sometimes Burpee's Stringless Greenpod beans bring $3.75 per bushel and at other times only 25 cents. If we could adopt minimum prices, it would hold the markets. It is difficult to get truckers to

work together unless some question which immediately affects their pocketbook comes up. When the government undertook to set a price on tomatoes last season our local truckers association, which includes Baltimore and Anne Arundel counties, felt that something should be done. A meeting was called for one Saturday afternoon in Baltimore and there were more growers there than I had seen together in all my born days before. There must have been a thousand. We adopted resolutions presenting the facts to the Food Administration and insisting that the price was too low. A committee was sent to Washington and the matter was satisfactorily adjusted. Another meeting was called for the following Saturday and there wasn't enough growers there to fill a fair sized jitney bus. But it does us good to get together. We can get information from each other.

PRESIDENT JAMES S. SMITH: We will now proceed to the election of officers for the ensuing year.

MR. E. E. NOCK: I move that the present officers with the exception of the Secretary-Treasurer be re-elected.

A MEMBER: I second the motion.

The motion was duly put and carried.

A MEMBER: I move that Prof. E. C. Auchter be elected to succeed the late Prof. Stoddard as Secretary-Treasurer.

A MEMBER: I second the motion.

PROF. JAMES S. SMITH: You have heard the motion. All who are in favor of it say "aye." All opposed "no." The "ayes" have it. I declare Prof. Auchter elected as Secretary-Treasurer.

A MEMBER: I move that this association affiliate itself with the Maryland Agricultural Association.

A MEMBER: I second the motion.

The motion was put and carried.

MR. LECATO: Why not have the County Agents take up the matter of soliciting new members

PRESIDENT JAMES S. SMITH: We have done that.

MR. A. M. TODD: Do all the agents know about the Vegetable Association?

MR. E. E. NOCK: I suggest that the County Agents be asked to furnish the Secretary with a list of the truck growers in

the prospective counties and that the association issue a pamphlet setting forth the objects of the association and send a copy to prospective members.

PRESIDENT JAMES S. SMITH: The meeting is now adjourned.

REPORT

OF THE

MARYLAND SHEEP GROWERS' ASSOCIATION

FIRST ANNUAL MEETING.

TUESDAY, DECEMBER 10th, at 10.30 A. M.

Minutes of the First Annual Meeting of the Maryland Sheep Growers' Association at the Emerson Hotel, Baltimore, on December 10, 1918.

The Association was called to order at 10.30 A. M. by the President, Mr. Edward A. Cockey. About forty members were present.

After a brief address by the President of the Association, the Minutes of the organization meeting of May 8th, 1918, were read and approved as follows:

Minutes of the Organization Meeting of the Maryland Sheep Growers' Association, held at Hotel Rennert, Baltimore, May 8, 1918.

Meeting called to order at 10.40 A. M. by Dr. T. B. Symons, Director of the Extension Service of the Maryland State College of Agriculture, who greeted those present and suggested the slogan, "A Million Sheep on Maryland Farms."

Edward A. Cockey was duly elected temporary president of the Association and F. B. Bomberger, as temporary Secretary.

The president then introduced Director H. J. Patterson, who discussed "The Possibilities of Sheep Raising in Maryland." Dr. Patterson expressed his interest in the movement to increase sheep raising in Maryland. He said that the

agricultural income of the State can be increased $5,000,000 per year through raising sheep. There are only 220,000 sheep in Maryland, one-half of these being in Queen Anne, Garrett, Talbot and Kent Counties. The State is well adapted to sheep. All sections of the State are adapted to the business. Tidewater counties grow now more sheep than the hill counties. Large areas of unimproved land in the State offer splendid opportunities for sheep growing. Dr. Patterson said that sheep are great tamers of land. A few sheep will improve a pasture for cattle by keeping down weeds and briars.

"The chief drawback to sheep growing in Maryland has been the cur dog. Questions addressed to farmers some years ago elicited the information that the cur dog had been the principal reason for their not growing sheep. The Legislature of 1918, passed a State-wide dog Law."

Dr. Patterson expressed the need of strong public sentiment to secure the strict enforcement of the Dog Law. "It is a patriotic duty to put an end to the worthless dog. It cost $34.00 to feed a dog per year, according to estimates made by the U. S. Department of Agriculture. There are 25,000,000 of dogs in the United States, consuming $850,000,000 worth of food. This sum represents nearly one-fourth of the amount of money raised in the Third Liberty Loan Campaign. Now is the psychological time to get rid of the worthless dog. Their hides would now be worth more than the dogs. Without removing the menace of the worthless dogs, the sheep industry cannot grow."

In conclusion, Dr. Patterson endorsed the slogan, "A Million Sheep on Maryland Farms."

Mr. Arthur C. Bigelow, President of "More Sheep and More Wool Association of the U. S.," discussed the need of more sheep and more wool. He traced the decline in the sheep industry in the United States. "Until recently sheep growing in the United States had been a pioneer industry, sheep following the cheap land frontier. Dependence was had upon the western sheep ranges and sheep were gradually disappearing in the East. The war has, however, precipitated a new situation. The More Sheep, More Wool"

campaign was started in order to provide against a national and international wool shortage."

"The American Nation has been very prodigal of its agricultural resources: We have dissipated our inheritance. We must rehabilitate our worn-out soils. Agricultural efficiency requires a larger development of live stock, and especially of sheep."

"Millions of acres in the East, Middle West and South are not producing, and they should grow sheep. Business men of the cities must awake to the necessity of making agricultural more profitable, and rural life more attractive. Growing industry in the cities will create a constantly increasing demand for wool and sheep. The sheep population of the world has decreased 54,000,000 per year every year since the war started. Wastes from worn clothing that usually return to the making of other clothing have been greatly increased by the war, because of the great destruction of woolen clothing of the soldiers."

The speaker urged the formation of a permanent organization of sheep growers, in order to grow more meat and more wool, to meet the urgent demand for these products created by the war situation. He discussed the organization of a public wool auction in Philadelphia, which was suspended, because the Government has taken over the whole wool supply of the Nation. He offered the services of the More Sheep, More Wool Association to the sheep growers of Maryland.

Mr. Clement S. Ucker, Vice-President of the Southern Settlement and Development Organization, then discussed the need for making use of the undeveloped land in the South Atlantic States. "We have ruined the fertility of the land," he said. "We are now facing a critical situation. America has been exporting our basic raw materials and buying in exchange articles manufactured abroad."

"The greatest need of America is to be assured of an adequate supply of food for its people, and raw materials for its industries. In 1880, 27 per cent. of our population lived in cities. In 1918, 50.3 per cent. Until recently, the meat, wool and hides were being raised on public lands belonging to the Nation at no cost for rental, and put the Eastern

sheep grower out of business. The disappearance of the public land has in turn put the Western sheep man out of business." "The psychological reason for the failure to rehabilitate the sheep industry is the failure of people to realize that a sheep is more valuable than a dog." He advocated the organization of the sheep growers, and emphasized the necessity for continued publicity. "The sheep industry in the past has been based upon wool, with meat for a by-product; the time has come when sheep will be grown for meat with wool as a by-product. We should raise wool on our own waste places. We should develop an agriculture that conserves soil fertility. Agriculture is our bed-rock industry, and live stock is its most important aspect. Sheep raising must be developed to create a sound system of agriculture."

Hon. W. McCullough Brown, of Garrett County, discussed the new State-wide Dog Law, and briefly explained its provisions.

Mr. Charles Wertheimer, of Frederick County, Mr. H. Witter, of Frederick County, and Mr. John McGill, of Allegany County, discussed various phases of the sheep industry in this State.

Mr. Frank W. Mish, of Washington County, said "The sheep industry needs only simple justice. Price of products will create the necessary stimulus to increased production." He commended the organization, and endorsed the slogan above referred to.

Dr. Earle and others discussed the Dog Law and its enforcement. "Publicity and public sentiment are necessary," seemed to be the consensus of opinion.

A Constitution and By-Laws were presented, discussed, amended and adopted.

Officers of the Association were elected as follows: Mr. Edward A. Cockey, Glyndon, President; Mr. Frank W. Mish, Hagerstown, Vice-President; Mr. F. B. Bomberger, College Park, Secretary-Treasurer; Mr. W. Carl Richards, Cumberland, Md., Mr. John B. Key, Chaptico, Md., and Mr. Charles W. Butler, Queenstown, Md., were elected members at large of the Executive Committee. The officers named,

with the addition of the members at large, constitute the Executive Committee of the Association.

At 12.30 o'clock, the Association took a recess until 2 o'clock.

AFTERNOON SESSION.

At 2.35 P. M. the Association reassembled. His Excellency, Emerson Harrington, Governor of the State of Maryland, addressed the Association. He complimented the State upon the passage of a State-wide Dog Law. He pleaded for its enforcement. He said that no law is of value, unless it is supported by intelligent public opinion. He complimented the Association upon its determination to increase the number of Maryland sheep from 220,000 to 1,000.000. He congratulated the State upon the splendid reorganization of the Maryland State College. The State has given the College a good charter, and provided an executive among the great agricultural leaders of the Nation. The State had the right to expect results. He pleaded for support of policies of the Government in providing for food and clothing for the army and our people. He knew that Maryland people would not falter in their duty.

Mr. F. R. Marshall, of the Bureau of Animal Industry, U. S. D. A., discussed "The Sheep Industry from the National View Point." He said, in part: "Before the war, we were using twice as much wool as we produced—since then, three or four times as much. The supply of wool is very short. The Government has taken over the 1918 wool clip of America. The development of the sheep industry is not a new matter. The sheep business which went out of vogue in the years past, was a wool business; the sheep business of the future will be a meat business with wool as a by-product. Before the war, wools were becoming scarce. The war accentuated it. Demand must be met. The western ranges cannot furnish it. It becomes necessary for the East to use the idle lands to produce wool and sheep." He pointed out that the Sheep Association can do several things:

It can enforce the Dog Law.

It can educate the non-sheep growing farmers through its members, officers, etc.

It can cooperate with the State Agricultural College Extension Service in improving methods of care and treatment.

He urged that the officers and members publish extracts of the Dog Law.

He believed that the Association would be of great value to the State now during the war, and especially after the war, when the trend of prices may be down rather than up.

Dr. A. F. Woods, President of the Maryland State College of Agriculture, in discussing the subjject, "The Importance of Organization to Promote the Sheep Industry in Maryland," said:

"An organization should provide several things:

First. Education of the people of the State to a realization of the importance of the subject which it represents. War has increased the speed of the movement for the revival of sheep raising. Economic changes had already taken place that were demanding more and better sheep.

Second. The investigational side of the question needs attention.

Third. The enforcement of the State-wide Dog Law is imperative. The Governor, the State Council of Defense and the State Department of Agriculture will cooperate to enforce the law.

Fourth. The State and National organizations must cooperate.

Fifth. Public sentiment must be produced by and through the organization to support all laws and regulations for the enforcement of the Dog Law.

"Agriculture," said Dr. Woods, "is the fundamental basis of all economic life and live stock is the basis of sound agriculture." He urged that the small farmer and the boy and girl be interested in sheep growing. He said, "Maryland lands are really cheaper than the land far west. A new era of agriculture is dawning. Agriculture should be based on cost of production, plus a reasonable profit. Each year that passes brings us nearer to the position where agriculture on a sound business business basis will be the rule."

Mr. Carl Richards discussed sheep growing in Allegany County. He paid a tribute to the County Agent of Allegany County in his efforts to stimulate sheep growing in that county. For three years, efforts have been made to bring in sheep and place them in the county on a share basis. Six hundred sheep were brought in last year—one thousand are being bought now. He expected to keep it up until 20,000 sheep are in the county.

Mr. John B. Keys, of St. Mary's County discussed growing sheep in a tidewater county.

Mr. John J. McGill, Jr., discussed the Allegany County Dog Law.

Mr. Doak, of Manassas, Virginia, discussed a number of matters connected with the sheep business in Virginia.

Prof. W. T. L. Taliaferro emphasized the necessity of proper care and feeding of sheep. He said that sheep could not be kept to best advantage on bushes and dry pastures. He advocated rotation pastures.

Mr. McCulloh Brown advocated the growing of one breed by all members of the society, with a view to securing a better market for both wool and meat.

Mr. T. E. McLaughlin discussed the Dog Law and care of sheep.

Dr. Earle pointed out that sheep should be given better care than is customary.

After a general discussion of a number of points presented, the Association adopted the following resolutions:

1. *Be it resolved by the Sheep Growers' Association of Maryland,* That we tender our thanks to the press of Baltimore City and of the Counties for their effective effort to arouse public interest in the organization of the sheep growers of the State. We urgently solicit their continued assistance in giving publicity to the efforts of our Association to promote the development of the sheep industry of the State.

2. *Resolved,* That we urge the saving of desirable ewe lambs for breeding purposes, and that we impress upon farmers the advisability of retaining such ewes within the County. The aid of the Extension Service of the Maryland State College is requested in the furtherance of this work and in assisting with the distribution of desirable stock throughout the State.

3. *Be it resolved by the Sheep Growers' Association of Maryland,* That we express to the management of the Rennert Hotel our appreciation of their hospitality in providing such commodious and pleasant rooms for the meetings of the Association.

4. WHEREAS, The shortage in the world's supply of wool, together with a serious shortage in the food supply, has produced a crisis demanding thoughtful consideration;

Be it resolved by the Sheep Growers' Association of Maryland, At its organization meeting in the Rennert Hotel, Baltimore, Maryland, that we respectfully urge upon the State and County authorities the rigid enforcement of the State-wide Dog Law, effective July 1, 1918, in order that the effort to grow more and better sheep may not be nullified by the ravages of the unlicensed, stray cur dogs roaming through the Counties; and

Be it further resolved, That we adopt as our slogan, "A Million Sheep on Maryland Farms."

The Association then, at 4.20 P. M., adjourned.

F. B. BOMBERGER,
Secretary-Treasurer.

Those present were:

Edward A. Cockey, Glyndon, Md.
Edward D. Noonan, 432 Equitable Building, Baltimore. Md.
Phillips M. Hall, Perryman, Harford Co., Md.
George H. Miller, Perry Hall, Baltimore Co., Md.
F. E. Hudson, Girdletree, Md.
C. W. Melville, Sykesville, Carroll Co., Md.
John S. Bushey, Woodbine, Carroll Co., Md.
Hiram Bullen, Highlandtown, Baltimore Co., Md.
Dr. S. A. Nichols, Dayton, Md.
Harry B. Soper, Vickers Building, Baltimore, Md.
George Morrison, Baltimore Co., Md.
Harry B. Witter, Frederick, Md.
J. T. Jardine, Washington, U. S. D. A.
F. H. Marshall, U. S. D. A., Washington, D. C.
A. C. Bigelow, More Sheep: More Wool Association, Phila., Pa.
John M. Michael, Aberdeen, Md.
J. W. Isennock, Long Green, Md.
W. Carl Richards, Cumberland, Md.
John McGill, Jr., Cumberland, Md.
R. M. Swann, Helen, Md.
Zach Johnson, Morganza, Md.
John B. Key, Chaptico, Md.
John E. Stevenson, Westminster, Md.
H. C. Towles, College Park, Md.
Charles Wertheimer, Frederick, Md.
K. Klaesius, 126 South Patterson Park Avenue, Baltimore, Md.
W. Armour Jenkins, Hyde P. O., Baltimore Co., Md.
W. M. Hillegeist, College Park, Md.
Samuel T. Earle, 1431 Linden Avenue, Baltimore, Md.
Albert L. Luttygerding, Owings Mills, Md.
G. F. Wathen, Jr., Loveville, Md.
Ella V. Mahoney, Bel-Air, Md.
Henry Brown, Chestertown, Md.
Arthur Williams, Kent Co., Md.
Jesse Leatherwood, Mt. Airy, Carroll Co., Md.
L. W. Faulkner, Maryland School for Boys, Loch Raven, Balto. Co.
R. C. Reed, College Park, Md.
James R. Galbreath, Street, Md.
Hugh Jewett, Darlington, Md.
W. T. L. Taliaferro, College Park, Md.
A. Claude Turner, Sollers, Md.
John Parran, Lusbys, Md.
J. E. Metzger, College Park, Md.
John S. Crowther, Bengies, Baltimore Co., Md.
H. C. Whiteford, Annapolis, Md.
J. F. Hudson, Towson, Md.
S. M. Shoemaker, Baltimore, Md.
A. F. Woods, College Park, Md.
Captain Charles W. Butler, R. F. D., Queenstown, Md.

The Association then listened with much interest to the Hon. William P. Borland, of the United States House of

Representatives, who delivered an address upon the "Budget System" for the Government of the Nation. This address was given at the request of the Southern Commercial Congress then in session in Baltimore.

Mr. Borland defined a "Budget System" as a system by which the administrative officials of the Government place in parallel columns or pages a full detailed statement of revenue and expenditure which the Legislative bodies use as a basis for the establishment of revenue and appropriation legislation. "This," he said, "is the British System. Our system is more ancient than the British and is not suited to our needs as a Nation. Our financial legislation is made piecemeal by committees, each of which considers only those phases of the industry which have to do with that particular committee. There is no consideration of the whole scheme of appropriations and there is no balancing of appropriation and revenue such as is essential in a budget system. The function of Congress is chefly to cut down the estimates of the several executive departments."

"Under the Budget System the administrative officials are responsible for the budget. The administration should not divide the responsibility with Congress. "Pork Barrel" legislation would be less common under the Budget System. If the administration is economical and efficient, the budget will reflect this; if extravagant and wasteful the budget will likewise make this plain."

Mr. Borland believes that a Budget System can be adopted to the American System. One item he thought vital to the scheme is the power of the administration to audit the accounts of the departments to determine whether the money has been wisely expended or not. He hoped the day would soon dawn when the American Government would put a Budget System in effect.

A vote of thanks was extended to Mr. Borland for his instructive address.

The report of the Secretary-Treasurer was then read as follows:

REPORT OF THE SECRETARY-TREASURER.

Fellow members of the Maryland Sheep Growers' Association, in presenting this brief report of the activities of our

organization, I shall take the opportunity to congratulate the Association upon the fact of its existence as an organization and upon the further fact that its career, though as yet brief, affords evidence that it is a lively youngster with a prosperous and useful future before it.

In response to an invitation from Dr. T. B. Symons, Director of the Extension Service of the Maryland State College of Agriculture, there were assembled at the Hotel Rennert in Baltimore on May 8th, 1918, about fifty persons who were interested in the organization of the sheep growers of the State as a first step in the stimulation and extension of the sheep industry in Maryland until there shall be "A Million Sheep on Maryland Farms."

The minutes of the meeting which have been read are evidence of the fact that the discussions were interesting and instructive and the representative character of the sheep growers present was an assurance of permanency in the work of the organization.

Immediately after the organization meeting, at the direction of our worthy president, I prepared a circular letter setting forth the essential facts in connection with that meeting and inviting the farmers and sheep growers of the State to join with the members of the Association in the work of organizing local or county sheep clubs, in saving ewe lambs from the butcher's block, in enforcing the State-Wide Dog Law, and in urging others to join the Sheep Growers' Association in order to make its influence greater and greater from month to month.

At this point I wish to offer an explanation, perhaps an apology, that the Directors of our Association have not been called together since our May meeting. I feel sure that our worthy president, as well as I, appreciated the desirability of having your counsel and support in the matters that came up for consideration during the months that have elapsed since our organization meeting; and on several occasions we seriously considered the wisdom of bringing the Executive Committee together; but the great pressure of work for everybody that resulted from our participation in the great World War and the fact that our treasury was not too plethoric with funds, rather induced us to go ahead, trusting

that our efforts might receive the cordial and unanimous endorsement of the directors. We hope that we have not wholly merited the censure of the other members of the Executive Committee.

As the enforcement of the State-Wide Dog Law was a matter upon which great emphasis was laid in our organization meeting, it was soon very evident that copies of the law should be placed in the hands of the sheep growers, and farmers of the State, as well as the officials of the several counties in order that the farmer should know the terms of the law and that the latter should know their duties and responsibilities under the law. Accordingly, we were able through the liberality of the Extension Service of the State College of Agriculture to have 5,000 copies of the State-Wide Dog Law printed and distributed throughout the State. For this service I believe the Extension Service is entitled to the thanks of this Association.

Efforts were made to have the law printed in full in all of the local newspapers of the State. The newspapers cooperated loyally, and I believe that practically all of them published the law.

Our next effort was to distribute posters, pamphlets, and bulletins to the sheep growers of the State, in order that they might have the latest information concerning the status of the Sheep and Wool Industry and also the best advice obtainable with regard to the management of their flocks.

Through the cordial cooperation of Mr. A. C. Bigelow, President of the More Sheep More Wool Association of the United States, we secured 2,000 copies of posters and pamphlets published by that Association, and distributed them to our members and to other persons interested in sheep growing in the State.

Through the cooperation of the States Relations Service of the United States Department of Agriculture we were able to secure several hundred copies of circular No. 95 of the Office of the Secretary of Agriculture relating to Wool Conditions in the United States and a similar supply of Farmers' Bulletins.

No. 576 on the "Breeds of Sheep for the Farm."

No. 935 on the "Sheep Killing Dog."

No. 840. on the "Equipment for Farm Sheep Raising."
No. 3 Library Leaflet entitled "Raise Sheep."

These were distributed as were the others.

By reason of some misunderstanding which arose among farmers as to the government requirements and methods of marketing the wool from their flocks, a number of pamphlets issued by the Wool Division of the War Industries Board, containing the "Government Regulations for Handling the Wool Clip of 1918," were secured and distributed. By this means the disposal of the wool of many sheep growers was greatly facilitated.

On July 31 another circular letter was issued again calling attention of the farmers to the need for "More Food and More Raiment with a Minimum of Man Labor." In this letter the need was shown for more local or County Associations as a means to securing better enforcement of the Dog Law and the saving of ewe lembs for breeding purposes. It was pointed out that even the President of the United States had set a fine example by placing a herd of splendid sheep upon the White House Lawns.

In this connection it may be mentioned that later in the season our worthy President addressed a letter to the President of our Nation asking that he exhibit his fine sheep at the several county fairs throughout the State. We believed that the exhibiting of a flock of sheep at the county fairs by the President of the United States would do more to focus public attention upon the importance of the sheep industry in this National Crisis than would any other act or utterance.

On September 25th, in response to a suggestion from the More Sheep More Wool Association of the United States, a letter was addressed to the members of the Finance Committee of the U. S. Senate and the Ways and Means Committee of the House of Representatives, asking that provision be made in the pending Revenue Bill for a Federal tax on dogs with a view to protecting the sheep industry against the ravages of irresponsible dogs roaming over the country and from State to State. . .

In the adoption of a form of letter-head for the official letters of our Association it was deemed advisable to arrange

on the margin a statement showing the quota of each of the counties of the State as constituting a part of the Million Sheep on Maryland Farms. It is hoped that these quotas which are based upon the principle of one sheep to every three acres of improved land within the several counties may serve as the goals towards the attainment of which the respective County Associations will direct their efforts.

So far no report has been made of the organization and achievements of the County Associations. Up to date ten County Associations have been organized in the following counties: Garrett, Allegany, Washington, Frederick, Howard, Prince George's, Charles, St. Mary's, Cecil and Dorchester.

Owing to the fact that data has not been received from all of the Secretaries of these County Associations, I am not able to report their total membership. Up to December 1st, 1918, dues have been received from 120 members of the State Association and membership cards have been issued accordingly. This membership ought easily be multiplied by four and without great difficulty by eight.

Not all of the Secretaries have submitted reports of the activities of the County Associations, but enough information is at hand to indicate that some of these Associations have been very active in carrying out the program of the State Association.

In all of the counties where local associations have been formed they have aided materially in arousing sentiment favorable to the enforcement of the Dog Law. They have done much to prevent the slaughter of ewe lambs and in a number of instances have been instrumental in bringing breeding sheep into the county.

In Howard County the association has been especially active in its efforts to secure from the County Commissioners fair remuneration for sheep growers who have suffered losses through attacks by dogs. The County Commissioners of that county had announced as a standard of remuneration for sheep killed or injured by dogs, that payment would in no case be made in excess of the assessed valuation of the sheep destroyed. The County Association sent a large delegation before the County Commissioners, and at the invitation of

the association, your Secretary-Treasurer also appeared before them, in order that the plain intent and purpose of the law, to foster and stimulate sheep and wool production, should be reflected in the measure of damages awarded by the Commissioners.

The result of the hearing was that a very much larger and more nearly fair measure of damages was allowed in the case of several sheep owners who had suffered losses from attacks by dogs. One rather remarkable outcome of this particular case was the announcement of the Commissioners that in no case would they allow more than twenty dollars per head as an award for the injuring or killing of sheep. I commend this particular ruling of the County Commissioners of Howard County to the special attention of the Maryland Sheep Growers' Association as well as to the consideration of every County Association. If such an arbitrary ruling, ignoring the plain facts of the situation, that many sheep within this State are properly valued at a higher rate than that mentioned, is to be allowed to stand as a precedent in such cases, the Dog Law enacted for promotion and stimulation of the sheep industry will fall far short of its purpose.

I cannot conclude this report without reminding the members of our association that the fight for more and better sheep is only just begun. Taking into consideration all of the circumstances, I believe that we have made steady and substantial progress. We have yet, however, a long way to go. We shall not attain the full benefit from our organization until all of the counties are organized; and that should be our immediate goal.

We cannot expect to have the adequate enforcement of the Dog Law as far as it relates to the taxing and tagging of all dogs in the county, and the destruction of all those not taxed and tagged until, through our associations or otherwise, public sentiment is awakened to the need of such action. We cannot hope to receive the full benefit of the law, in so far as it relates to the remuneration of sheep growers for injuries suffered, until, through our associations or otherwise, the County Commissioners are made to feel that they are, in this respect, merely trustees of funds designated by law for the complete indemnification of sheep owners for injuries

to their flocks caused by dogs. The situation demands vigorous, incessant action and it constitues a clear call to duty to all those persons who realize the extent of the world's needs for wool today. The signing of the Armistice has by no means relieved the wool shortage. Perhaps the need may not be so imperative as it would have been had the military operations continued on the scale on which they were moving up to that time; but signing a paper will not create either sheep or wool. Practically the same considerations which impelled us to form our organization a few months ago urge us to grow more sheep and more wool now. In the language of our first letter to the sheep growers of the State: "We believe that to raise more sheep in this present crisis is sound business, good agricultural practice, and the highest type of patriotism."

As Treasurer of your organization I beg leave to report that I have received as dues from members, the sum of $122.00, which has been deposited in the First National Bank of Hyattsville, Md. Against these deposits, I have drawn checks aggregating $40.90 as follows:

To Meyer and Thalheimer—Stationary and printing.....	$19.40
To Postmaster, Riverdale, Md.—200 3c stamps.....	6.00
To Thomas and Evans Printing Co.— Membership Cards.	6.50
To Postmaster, Hyattsville, Md.—200 3c stamps.....	6.00
To Postmaster, College Park, Md.—100 3c stamps.....	3.00
Total	$40.90

There remained in the Treasury on December 7, 1918, the sum of $81.10. All bills have been paid and vouchers are in hand covering all expenditures.

F. B. BOMBERGER,
Secretary-Treasurer.

The report of the Secreary-Treasurer was accepted and the financial statement referred to a special committee to audit.

Mr. W. Carl Richardson, of Allegany County, discussed the plans followed in Allegany County to increase the sheep population of that county. He said that in cooperation with the local Sheep Growers' Association, W. Carl Richardson & Co., had succeeded in placing over 1,600 head of sheep on

the farms of Allegany County. "Much interest in sheep growing had developed," he said, "and more sheep will be grown as soon as farmers are convinced that the Dog Law is to be strictly enforced."

Mr. Charles Wertheimer, President of the Frederick County Sheep Growers' Association told of the activities in that county. He said in part: "In making a summary of the activities of our local Sheep Growers' Association, we are glad to report that through our efforts approximately 1,200 breeding ewes were brought into the county. 300 were purchased directly by the association and the remaining 900 were brought in by local dealers and others in car-load lots and sold at public auction. Our report would not be complete unless we said just a few words about the enforcement of the Dog Law. To date the County Treasurer has collected $6,093.68 for dog licenses and all reports are not in. Damages so far amount to $80.90 for fowls and sheep destroyed. When the law first became operative, county officials were not very enthusiastic about its enforcement, but at the request of our local Farmers' Organizations, and especially of our Sheep Growers' Association, the State's Attorney called a meeting of the County Commissioners and representatives of the various rural organizations to consider the matter. The outcome of the meeting was that all County Magistrates were called to a conference, and instructed by the County Commissioners and State's Attorney to strictly enforce the law and impose all costs upon the owner of a dog not bearing a license tag in case the owner is convicted of being guilty of violating the law. Each magistrate was provided with an alphabetical list of the owners of all dogs in his district who have secured license tags and it is his duty to search out parties who have failed to secure licenses and proceed to prosecute them in accordance with the law. So far results have been very satisfactory." He said that he had been appointed as deputy sheriff to assist in the enforcement of the Dog Law; that the County Agent had aided greatly in the work. He suggested that in making appraisal of damages suffered from dogs the County Agent should be invited to assist the Board of Appraisers, but not to act as a member of the Board.

Mr. T. L. Smith asked how the appraisers can be paid. It was pointed out that they may be paid out of the general county funds other than the dog tag fund.

Mr. Richards said that in Allegany County the appraisers were summoned and paid $1.00 per day.

Dr. Nichols said that in Howard County no remuneration was paid to the appraisers. He said that the Howard County Association had been active in enforcing the Dog Law. He pointed out that the Sheep Association had labored hard to secure a fair rate of remuneration for injuries to sheep caused by dogs and hoped that the State Association might be able to give aid to the local associations in this matter.

Mr. Robert Crain discussed the great importance of the Dog Law to the people of the State. He said that it was not worth 30 cents unless it is enforced. Mr. Crain said that a flock of sheep properly managed will yield a profit of 25 or 30 per cent. He keeps 500 sheep on his farms. He wants to increase the number until he gets 2,000 sheep. He said that sheep cannot live on straw and water. They need careful treatment like other stock. He advised getting good sheep and taking care of them, not having more sheep than can properly be cared for. He thought that the sheep industry is bound to grow, and that Maryland is a State well adapted to sheep growing. He congratulated the State upon the organization of Sheep Growers of Maryland.

Dr. S. A. Nichols moved that four committees be appointed as follows:

1. Committee on plan for Enforcing the Dog Law.
2. Committee on drafting a fair basis of remuneration to sheep owners for losses by dogs.
3. Committee to audit the books of the Secretary-Treasurer.
4. Committee to nominate officers of the association for the ensuing year.

This motion was seconded and carried, and the president named the following committees:

1. Committee on plans for enforcing the Dog Law:

   Mr. Chas. Wertheimer, Chairman.
   Mr. W. Carl Richards.
   Mr. W. B. S. Chapman.

2. Committee on drafting a fair basis of remuneration for losses by dogs:

Dr. S. A. Nichols, Chairman.
Mr. T. L. Smith.
Mr. F. B. Bomberger.

3. Committee to audit the books of the Secretary-Treasurer.

Mr. P. A. Hauver, Chairman.
Mr. J. L. Fidler.

4. Committee to nominate officers:

Mr. M. O. Stabler, Chairman.
Mr. E. C. Remsberg.
Mr. P. A. Hauver.

The meeting at 12.30 adjourned to meet at 2 o'clock.

AFTERNOON SESSION.

The afternoon session was called to order at 2 P. M. by President Cockey, about 50 members being present.

The committee on nominations reported, renominating all of the old officers of the association. The report was adopted.

The committee on auditing the Secretary-Treasurer's accounts reports that the books had been found O. K. The report was adopted.

MR. E. L. SHAW, Specialist in Sheep Husbandry, University of W. Va., then discussed "Practical Sheep Management on Maryland Farms." Mr. Shaw began his talk by showing a chart which showed that Maryland stands 31st on the list of States of the Union, with 234,000 sheep. Mr. Shaw said that Maryland should have a million sheep, and that the surest way to do so is to enforce the Dog Law. He said that every farmer should have a flock of sheep, a telephone and a shot gun. The more sheep there are in a community, the easier it is to control the dog, because public sentiment under such conditions is stronger for sheep than for the dog. He showed that the trend of sheep raising is now eastward. Ohio, an eastern state, ranks fourth in the list of sheep states today.

CHART SHOWING SHEEP POPULATION BY STATES.

1. Wyoming	4,100,000	25. Wisconsin	651,000
2. Idaho	3,202,000	26. Tennessee	606,000
3. New Mexico	3,135,000	27. Minnesota	568,000
4. Ohio	3,091,000	28. Kansas	418,000
5. Montana	3,045,000	29. Nebraska	408,000
6. California	2,776,000	30. N. Dakota	252,000
7. Oregon	2,448,000	31. Maryland	234,000
8. Utah	2,340,000	32. Louisiana	209,000
9. Texas	2,188,000	33. Oklahoma	208,000
10. Colorado	2,086,000	34. Mississippi	174,000
11. Michigan	1,926,000	35. Maine	163,000
12. Nevada	1,630,000	36. Arkansas	149,000
13. Arizona	1,550,000	37. Georgia	144,000
14. Missouri	1,466,000	38. N. Carolina	137,000
15. Kentucky	1,270,000	39. Alabama	131,000
16. Iowa	1,224,000	40. Florida	120,000
17. Indiana	998,000	41. Vermont	106,000
18. Illinois.	998,000	42. N. Hampshire.	37,000
19. Pennsylvania	913,000	43. S. Carolina	31,000
20. New York	840,000	44. Massachusetts	28,000
21. W. Virginia	751,000	45. New Jersey	26,000
22. S. Dakota	750,000	46. Connecticut	20,000
23. Virginia	686,000	47. Delaware	10,000
24. Washington	661,000	48. Rhode Island	6,000

Mr. Shaw said: "One should not go into the sheep business without knowing what the business is. It is necessary to know something about sheep in order to get the best results. Sheep must be kept free of parasites, especially during the breeding season. Sheep should be well fed. No animal will better repay care and feed. Sulphur, salt and copperas in the proportions of 15 oz. salt, 2 oz. sulphur and one oz. of copperas (Iron Sulphate) should be kept at all times before sheep in order to keep down internal parasites. This mixture also helps the texture and quality of the wool." Mr. Shaw advocated early lambing (March preferred), provided the Sheep Grower is prepared to take care of the lambs at that season. Early lambs properly fed reach the market in early summer before the development of parasites. He advocated the use of sheep hurdles in order to prevent loss of lambs. He said in part, "Lambs should be docked at a week to ten days old. Use pincers heated red hot. This removes danger of infection and of serious bleeding. Ram lambs should be castrated early (about three weeks of age) and marketed as wethers. Cut off the end of the scrotum and pull out the testacles, cords and all. Castration greatly improves the quality of the meat."

"Good corn silage is an excellent succulent food for sheep; but it should not be fed frozen or mouldy. Plenty of its mother's milk is best for the lamb. Corn silage fed to ewes will promote flow of milk. Sorghum is good for sheep. Anything good for production of milk in dairy cows will produce milk in sheep. Two-thirds oats and one-third corn is good mixture. One-third oats, one-third corn and one-third bran is also good. Sheep need plenty of water, Sulphur fed to sheep will cause ticks to leave sheep in winter. Green pine boughs fed to sheep in small quantities are good for the health of the sheep. Examine skin of lambs frequently—part the wool and see that lamb's skin remains a good pink color. Lambs kept over through July and August feel the bad effects of parasites. Therefore, lambs should be treated with the copper sulphate solution (1 oz. copper sulphate in 2 quarts of water and 1 oz. mustard). Give a lamb 1 oz. of the mixture."

Mr. Shaw recommended rotations of pasture for sheep. 25 to 30 sheep on a farm of 160 acres with other live stock in proportion is enough. He advised against the gasoline treatment for parasite and recommended treating breeding ewes in the fall with copper sulphate solution and again in the spring. A few sheep infected with parasites may infect the pasture so that the whole flock may become infected unless such precautions are taken. He advised that pine tar be put on the noses of sheep in summer in order to drive away the fly that causes the maggot in the head.

In concluding his instructive and entertaining address, Mr. Shaw said, "More sheep means better farms. I believe that Maryland will soon have more and better sheep. The best way to bring about this result is for the sheep growers to line up with the association and pull together for a constructive program of development for the industry.

Mr. George Stephenson suggested that a "Sheep Car" might be taken from point to point in the State in connection with Farmers' Institutes to illustrate best methods of handling sheep.

Mr. Robert Crain asked for information as to the advisability of growing Shropshires and Hampshires.

General discussion followed concerning a number of phases of handling sheep.

A committee was appointed to go before County Commissioners of Howard County to secure reconsideration of the recent action of the commissioners in fixing an arbitrary maximum of $20.00 for remuneration of the owner of any sheep killed by dogs. The President named the following committee: Mr. E. A. Cockey, Dr. S. A. Nichols, Dr. S. S. Buckley and Mr. F. B. Bomberger.

At 4.30 P. M. the association adjourned.

REPORT

OF THE

MARYLAND IMPLEMENT DEALERS' ASSOCIATION

FIRST ANNUAL MEETING.

THURSDAY, DECEMBER 12th, at 10 A. M.

CHAIRMAN WM. M. POGUE: It gives me a great deal of pleasure to introduce Dr. T. B. Symons, Director of Extension, Maryland State College.

ADDRESS OF WELCOME.

By DR. THOMAS B. SYMONS,

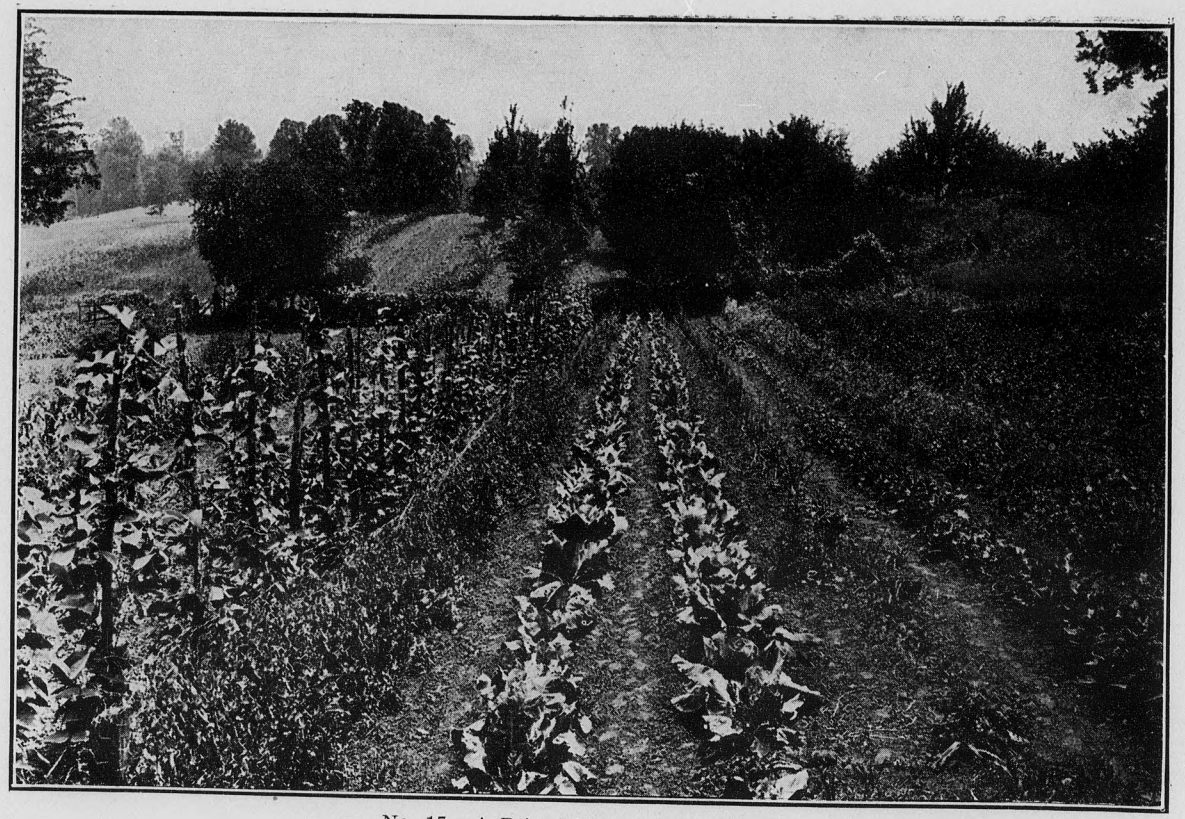
Director Extension Service Maryland State College.

Mr. Chairman, and Gentlemen of the Association:

In arranging this program Mr. Wirt and Mr. Pogue did me the honor to ask me to express a welcome to the implement dealers of Maryland to attend a conference at this time with a view to increasing the interest and cooperation between the farmers and implement dealers. I assure you that on behalf of the Agricultural Society we welcome the Implement Dealers' Association in the fullest sense. We feel that in the new age that is before us, in the readjustment period that is to come that the implement dealers and the farmers must play a most important part.

Our agricultural societies have been meeting for several years annually, individually as associations, and recently were federated into what is known as the Maryland Agricultural Society, made up of the distinct industries which are affiliated with the State organization.

I am sure that every farmer welcomes a more keen interest on the part of the men who furnish implements, to the con-



No. 17.—A Prize-Winning Home Garden.
—Courtesy of States Relations Service, U. S. D. A.

REPORT

OF THE

MARYLAND IMPLEMENT DEALERS' ASSOCIATION

FIRST ANNUAL MEETING.

THURSDAY, DECEMBER 12th, at 10 A. M.

CHAIRMAN WM. M. POGUE: It gives me a great deal of pleasure to introduce Dr. T. B. Symons, Director of Extension, Maryland State College.

ADDRESS OF WELCOME.

By DR. THOMAS B. SYMONS,

Director Extension Service Maryland State College.

Mr. Chairman, and Gentlemen of the Association:

In arranging this program Mr. Wirt and Mr. Pogue did me the honor to ask me to express a welcome to the implement dealers of Maryland to attend a conference at this time with a view to increasing the interest and cooperation between the farmers and implement dealers. I assure you that on behalf of the Agricultural Society we welcome the Implement Dealers' Association in the fullest sense. We feel that in the new age that is before us, in the readjustment period that is to come that the implement dealers and the farmers must play a most important part.

Our agricultural societies have been meeting for several years annually, individually as associations, and recently were federated into what is known as the Maryland Agricultural Society, made up of the distinct industries which are affiliated with the State organization.

I am sure that every farmer welcomes a more keen interest on the part of the men who furnish implements, to the con-

No. 17.—A Prize-Winning Home Garden.
—Courtesy of States Relations Service, U. S. D. A.

sideration of their problems, and I believe that you gentlemen are sincere in having a more keen interest in the men whom you are trying to serve. So far as our Extension Service of the Maryland State College is concerned we welcome conferences of this character, and believe that much good can grow out of a little more and better understanding of each other in the business in which each is engaged. I feel that in the problems before us the agricultural industry must of necessity lead in the prosperity to come, and of necessity those who do business with the farmer must anticipate a prosperous period.

As to the means of promoting prosperity and a better understanding, there is nothing better than the conference we had yesterday afternoon when the tractor owners and the tractor sellers could come together and discuss the difficulties involved in the all-around business of labor-saving machinery. Labor-saving machinery, gentlemen, is only beginning to be considered as an important adjunct to successful farming, and I feel that the business of agricultural implements is in its infancy in this State. You have, you might say, a grave responsibility in furnishing the means to offset the labor shortage, and the production of an adequate quantity of food, and it is a question whether we can induce farmers to use as much labor-saving machinery as we believe they should, and it is a question whether you men can rise to the occasion in furnishing adequate equipment that will induce the farmers to continue to use such machinery.

I feel the opportunity is ripe when you must establish greater confidence between the implement dealer and the farmer. It is too often true that farmers will buy a new piece of machinery and in a year or two it is cast aside as being useless to them, either for want of service, want of parts, or for other reasons which seem to them that it is not worth while to fool with the new machinery in which they invested two or three years before. That is true with tractors, true of many other farm implements. I am sure you gentlemen welcome probably as much as do the farmers the effort towards the standardization of machinery. As I understand it, farm wagons, for instance—I don't know the exact number—nearly two thousand types, and these have very largely

decreased to standardized types of possibly twenty or twenty-five. The same is true with other farm implements. That is coming and the sooner we can help it along the sooner we will put agriculture upon a more satisfactory basis, because the fact of having different makes by the same company where farmers cannot get parts, and cannot exchange parts, is certainly uneconomical, and I don't believe there is any body of men who are so interested in the prosperity of the farmers as are the implement dealers. Certainly when the farmer is prosperous the business of the implement dealer is good.

That brings up the question which was so well put forth by your chairman yesterday—the amount of service that you gentlemen will render farmers. We are engaged in a similar business, through our extension work in the State we have a fine organization of men and women who are devoted to service to the farmers and home makers of the respective counties, through our County Agents and through our specialists. It is needless to add that the other divisions of the Institution are rendering the same service in their respective fields—Dr. Patterson, who represents the Maryland Experiment Station, which is the father of progressive agricultural education. They investigate problems, and then hand them over to the Extension Service to carry their work and information to the people. It is, therefore, very desirable for you gentlemen to consider as to what service you can render the farmer.

I have felt that while in the past it may have been a good policy to aid in production through educational methods for the future I believe that every implement concern, Mr. Chairman, has sufficient business in hand not to require them to carry on a production campaign. I believe that in all the States in the union, and certainly in our State, that you can well rely upon our organization to carry information concerning the production of crops to the people, but where you gentlemen can render an untiring service is to demonstrate the use of labor-saving machinery, and to see that the machinery will live up to what you claim it to be.

One of the gentlemen said yesterday—Mr. Pogue, or possibly Major Chase—that naturally you gentlemen are en-

gaged in selling, so that if a farmer will not pay $1,000 for a given implement, then you proceed to make an implement that you can sell for the price that he will pay for. Now, gentlemen, I believe that we are mutually interested in that problem representing, as I say, the educational agency. We should cooperate in educating the farmer to pay his money and to get the value received, and to pay sufficient money to get a proper character of machinery. There was never anything in cheap goods, and if you gentlemen in your knowledge of a certain implement know that it won't stand up, and you are just making that machine to sell it, I maintain that you are going on the wrong principle. The thing to do is to make a machine that you know will stand up, will be worth every dollar that is paid for it, and the farmer can well afford to invest in that machine and depend upon on its holding up under ordinary treatment.

It seems to me that we have a striking illustration in the automobile service. I think it is common knowledge among those of us who have machines that the service that is rendered now by the automobile manufacturers is not satisfactory. In other words, those who buy machines from a given company in a great many cases will change on account of the exorhitant prices, and misunderstandings with dealers in rendering services to the machine. But I want to call attention to the manner in which farmers have bought automobiles. I don't think there is any question in these days that the ordinary progressive farmer will invest his money, if it can be demonstrated to him that the machine will give good service. That has been the case with automobiles, with the Ford, for instance—the only thing that has sold them. While the Ford is a cheap machine, it is wonderfully serviceable, and I am just questioning whether we cannot initiate a service similar and better than the automobile people are offering to those people who have automobiles today. You locate a man who has got a machine, an automobile, and he has satisfactory service rendered by the dealer from whom he bought that machine. You have that dealer, give him the proper attention, and the farmer will give the best sort of support for that machine. There is the best kind of feeling between the seller and the buyer.

It seems to me that that is the kind of cooperation we want to inaugurate between implement dealers and farmers.

I heartily concur in the statements made by Mr. Pogue yesterday that we should encourage farmers to deal with legitimate dealers, deal with the men who are in the business to stay. That argument is sound and while the Extension Service will play no favorites, they will try to treat every company fair, and we do want to be able to say when we are advocating a given machine to a farmer that not only the implement dealer is right back of it, but that the machine will hold up, so that we can recommend to the farmers the purchase of certain machines.

There is a great big field for the introduction of new machinery in the east. We will have to leave it to the business ingenuity of the implement dealers and manufacturers to develop the machine, to manufacture it, and to put it on the market at a reasonable price. We have been very fortunate, I think, during the past year, to secure the services of Mr. Wirt to take charge of our farm machinery work in the State. I am sure that Mr. Wirt and the service will stand ready at all times to help you gentlemen whenever we can, but I feel that there must be a common understanding, a confidence that cannot be shaken in the manner of doing business, in the character of machines that are put out, and the amount of service that the implement dealers will render to the farmers. We don't desire to emphasize or to specialize between machines. It is a very crucial period now with the factories. When we are asked "What is the best tractor for the farm?" "How much money should we pay?" "I want you to give us advice as to the best tractor to purchase." Gentlemen, you, of course, realize that it is difficult in any business to say which is the best. There is no best. We do want to be able to say: "There are so many machines being sold in Maryland. We know the reputation of those manufacturers is such that if they put a machine on the market, that they can back it up." It may not be adaptable to the sandy lands of Wicomico County, but may be adaptable to other sections. The machines are made for different lines of work, and we can point out the advantages where the machine can be used to better advantage.

Gentlemen, I venture to express the hope that this can be an annual affair, that the implement dealers will continue to come to our Maryland Agricultural Society meetings. I think we might as well face the facts and recognize that there must be more business in the farming game, that the farmers must get together and cooperate more closely in the selling of their products. We have an illustration of that in the case of the dairymen, which have recently been organized into a Dairyman's Organization, through which their milk is sold through the business organization. Now, just as soon as the different industries organize on that basis, they are going to be presented with the question of buying, and while we have felt that the selling of farm products is far more important than the buying, just so soon as they feel that they are not getting satisfactory service from any particular industry in that locality pertaining to farm implements they will league together and buy farm implements together, so that it seems to me that the time is ripe and opportune for you gentlemen to attend the farmers' meetings. I see no reason why the local dealers should not attend the local farmers' meetings the grange meetings, and other sectional or community meetings that are held in the counties. You would be surprised, gentlemen, to know how a farmer appreciates the interest that you would take in his business and the more interest, the more demonstration of this interest that you have in the success of farming in any given locality the better business and the better co-operation will exist between the two parties.

I express the hope that you will make yourself acquainted with the educational agencies, and that if you have any special work to do that you will confer with our organization before it is put in a county. As I say, we propose to be able to render the service necessary along production lines. and we look to you gentlemen to help us and to give the information from the standpoint of using farm machinery, and that whenever you gentlemen feel in any given locality that there is an opportunity for demonstration work along labor-saving machinery lines, I express the hope that you will confer with our institution and let us get together towards meeting the common end, and common desires.

I feel that there are no two bodies of men in the country that should be so closely linked as the farmer and the implement dealer, and at the present time you will have almost as close relation existing as that exists today between the canners and the growers. You go in a great many sections of this State and the farmers feel that the canners have taken advantage of them, and the farmers are organizing. We are just approaching a period now when we will consider this for another year.

I believe that there is a wonderful opportunity for frankness in this business. I can't see that it would not be good business for the implement dealers to let the farmers have a little more information concerning the cost of producing agricultural implements as we want some more information concerning the cost of production. You speak to farmers, and they will say "Here we have increased cost of labor—our drill has jumped from $90 to $150," and a great many of them feel that the local implement dealers are putting that price on themselves, but if you go into the matter with them and make them understand the ramifications of the business, it would be different. I feel, Mr. Chairman, that here is an opportunity for you to do some educational work. I believe that every dealer should be very frank and say, "Here I handle so-and-so's goods. I believe that those are good goods, that we can stand back of them," and give them information in regards to the cost of producing those goods, give them information as to the profit you are making. There is nothing to be ashamed of in making a legitimate profit in doing business. I don't believe the intelligent farmer would object to a dealer making a fair and reasonable profit on his business. The more light that you can give him on that subject, the more confidence you will arouse in him. I feel that this is a most opportune occasion for the implement dealers to come together in facing the new age in the world, the new production program in the East, and I express the hope that you gentlemen at this conference will devise plans for continuing cooperation, that you will have local dealers' meetings in the counties, that you will have a joint session. What a splendid thing it would be in the counties if the implement dealers get together and the farmers get together

in order to discuss this next year the availability and desirability of implements and the many other problems that enter into this subject. I think a conference of this kind in every county in this State would result in much good.

Mr. Wirt is going to have a number of schools, tractor schools this year, with a view of educating the farmer into the practical use of tractors. There is nothing that you gentlemen are so interested in as trying to show the farmer how he should handle his machines, and I feel, too, gentlemen, that you need a little more information in regards to successful agriculture, that you should be particularly interested in the manner in which a farmer is running his farm, and that a community of interest will soon develop by the farmer having more knowledge of your business, and then you will all be able to cooperate more closely together.

I congratulate the members upon this fine conference, Mr. Chairman, and assure you that Mr. Wirt, and Dr. Woods, Dr. Patterson and myself, and all the specialists of the Institution are at your service, and any time that we can do anything to promote cooperation between these individual organizations we will be most happy to do so.

CHAIRMAN WM. M. POGUE: We will now listen to Mr. Grant Wright, Editor of the Eastern Dealer on Implement Supply, Repair and Service situation.

To the regret of all who heard the discussion of this subject, the notes were lost, consequently they cannot be reproduced.

CHAIRMAN WM. M. POGUE: Our next speaker will discuss that subject so near to all implement dealers, selling tractors, Mr. W. L. Clark, of the Moline Plow Company.

Selling Tractors by Mr. W. L. Clark, of the Moline Plow Company.

ADDRESS.

By W. L. CLARK, of the Moline Plow Company.

Mr. Chairman and Gentlemen:

I want to say that I regret very much that a delayed train due to an unusual amount of rainfall which prevented me from attending the meetings yesterday. I understand you had a great meeting. I do not know to whom I owe the in-

vitation of being here, but I am glad to be with you. As I rise, however, my sympathy goes out to the implement dealers who are getting the dose which belongs to the whole State. Just now you are in the position of Colonel Marsey's porter, Robert, who asked to go to a baseball game. The Colonel being unoccupied for the afternoon, dropped out by the game and spied Robert in the field. "How are you getting along" asked the Colonel. "Just fine," answered Robert. "What is the score?" asked the Colonel. "Sixteen to nothing," remarked Robert. "My, you are going to get beat bad," said the Colonel. "Oh, no, said Robert," we haven't gone to bat yet."

With reference to the State Agricultural College; Let me say that its intelligent, practical, true work deserves your support and the support of all interested in farming and farm implements. I am pleased to endorse the great work it is doing.

There is no subject before the commercial world today that is so widely discussed from so many different angles, no article of commerce the subject of so many dreams, visions and prophecies as the tractor. Men in all walks of life, from the farm laborer to the capitalist are speculating on its immediate and future possibilities. I am compelled to say that you have as much mis-information about it as real information. I think a good many of us are like the story in the reader of the blind men's opinion of the elephant. The first said it was like a tree, the second thought it was like a wall and the third, who felt his trunk, thought it was like a snake.

Periodicals, magazines, trade, farm and newspapers are filled, not with advertisements, but feature articles and editorial matter on the tractor. It is, of course, a typical American invention; that is, the development of the smaller units now being used has all taken place in this country. Unless you have paused to review it, you will also be surprised when you consider it, to realize how rapid has been its development and how quickly the public, both farming and manufacturing, have accepted it as not only a commercial product, but an every-day necessity in modern agriculture. Of course, there have been mistakes—you cannot crowd into two or three years, the progress which would ordinarily require a

quarter or half a century and find errors getting by. See what we have tried to do. We have taken into this industry, engineers, mechanics, etc., and have brought it along many times faster than the automobile. There have been mistakes in selection and in operation but what else could you expect. Do not condemn the industry. Men without either sufficient mechanical experience to design, or else lacking a very necessary knowledge of what a tractor should be expected to do, and men without either the broad business training or adequate resource to build and market such a product have all attempted to produce a tractor. Each year sees some new design or idea—and who shall say that we have yet seen the ultimate tractor?

But can we stand idly by and wait for its arrival, or should we not take advantage of the progress we have so far made and particularly now when it seems as if the whole world were crying for food, utilize what the industry now offers us. Investigate the purpose for which the machine was made, how it was intended to be used, then take it and make the most of it. The buider, the dealer and the farmer are to be considered. The builder must assume responsibility for the design, or type of machine and this must be free from interent structural weaknesses that would condemn it and even endanger the operator. He must also stand sponsor for minor defects in material and the lapses of careless workmen. His advertising must tell the truth and his representatives adhere as nearly to it as frailties of human nature will permit.

The dealer, or as you sometimes say, agent, is the man who retails and the one with whom the purchase comes into immediate contact; the one to whom the purchaser looks for guidance. Right here, of course, arises the question as to what class of merchants are to be the tractor dealers and let me emphasize that word *merchant* for if he be not a real merchant, he has no business in the tractor game. The dealer must confine himself to the statements backed up and authorized by the manufacturer.

Let us pause here and consider the working out of an average sale. The manufacturer has first designed and built the machine, he has then advertised it, both by direct and

general methods through the recognized mediums. The prospect has become interested, perhaps he writes in for prices and terms and his name is referred to the dealer. Now, is that dealer prepared to handle the sale, unload and start the machine and instruct the operator? In some cases he may be, but in many, he is not. Instead, he calls on the manufacturer for a salesman, demonstrator and an expert. Suppose you consider that the services of these three men in these three capacities mean in the sales cost, which the consumer must pay. I am compelled to say to you that the sales cost of most all manufacturers today are too high, and much of this waste must soon be eliminated, for this product must be gotten to the farmer at the lowest possible cost and by the most direct route possible, with good business methods and coupled with a fair profit to the essential agencies involved. In other words, if the dealer, whether implement or otherwise, is to receive any profit from the sale of tractors, it is essentially necessary that you contribute something to aid in the facility of distribution, maintenance and more general use, and you know this world war has taught us a lot about the elimination of non-essentials, so please do not consider the dealer as a non-essential but as one who is so vitally essential that every one associated with the industry will recognize him instantly as such and will grant that the "Laborer if worthy of his hire.

The unskilled purchaser must be taught and accorded a certain amount of assistance in the beginning, but so far as his having a life lease on the dealer's services thereafter, that condition must come to a halt, and the sooner, the more profitable will tractors become to all concerned, the builder, the seller and the buyer. Let me urge you dealers that you keep acquainted with your county agent. You can expect cooperation from him. Of course, you cannot expect him to boost your own particular make of machine, but the county agent is acquainted with the farmer, and he will cooperate with you. If the tractor has been sold on a farm on which it will not run, or if you have sold a small tractor where a large one is needed the county agent will help you fix up these matters with the farmer.

LIBRARY UNIVERSITY OF MARYLAND

Now about territory: Don't try to cover too much territory. Better one-half a county well worked—machines close together, saving time and mileage in visiting them, than two counties poorly covered and tractors widely scattered. When you have contracted them, lay out your territory, find out how many farmers of 60 or 80 acres and up, there are—locate these on your map, get the names of the farmers on them, rate these men as to credit. good, fair, slow and poor—then you have something definite and concrete to work on. Stick to the recognized terms and authorized price. Refuse to sell to a man who has no use for a tractor, or one who has broken up or ruined some other make of machine. Scare your buyers thoroughly on the subject of lubrication, impress them with the importance of buying only such oils as are permitted by the builders and the necessity of constant vigilance on this subject.

About prices; the price of implements will not fall in the markets. Do not let anybody convince you of the possibility of a reduction in the price of tractors. Within thirty days after the Government control is taken off steel, it is going to sell higher instead of lower.

Question Box

Under this subject various questions of vital interest to the implement dealers were discussed at length. No notes were taken.

LIBRARY, UNIVERSITY OF MARYLAND

INDEX

Page

A.

Address of Welcome—T. B. Symons..... 288
Allen, W. F., Remarks by..... 38

B.

Balderson, L. B., Address by..... 51
Bomberger, F. B., Report by.....267-275
Bours, W. A., Address by..... 25-32
Bryan, C. E., Address by..... 128

C.

Cale, G. H., Address by..... 234
Chase, Major L. W., Address by..... 62
Clark, W. L., Address by..... 295
Cohill, E. P., Remarks by 37, 49, 157
Cohill, E. P., Address by 144
Cohill, Andrew J., Remarks by..... 125
Constitution 5
Cory, E. N., Address by 138
Cory, E. N., Address by 225
Cory, E. N., Report by 168
Cushman, Samuel, Address by..... 228

E.

Election Officers, Agricultural Society..... 49

F.

Financial Statement 89

G.

Gamble, J. A., Address by..... 195

H.

Harrison, Orlando, Address by 10-15
Harrison, Orlando, Remarks by 50
Harry, D. G., Remarks by..... 176
Heaps, I. W., Report by..... 214

K.

Karr, Sydney H., Address by..... 55
Kile, O. M., Address by..... 102

L.

Page
Letter of Transmittal..... 3

M.

Maryland Agricultural and Readjustment Program..... 35
Milk Cost Studies..... 185
Miller, E. A., Address by..... 126
Morrison, George, Remarks by..... 38

N.

Nock, E. E., Remarks by..... 265

O.

Officers of Agricultural Society..... 4
Ousley, Col. Clarence, Address by..... 15-25

P.

Pack, Charles L., Remarks by..... 25
Pattee, Richard, Address by..... 197
Patterson, H. J., Address by..... 44-49
Pergler, Charles, Address by..... 133
Pogue, W. M., Address by..... 76
President's Annual Address..... 10

R.

Reed, R. C., Address by..... 217
Report Secretary-Treasurer, Maryland Agricultural Society. 32
Report Committee on Resolutions..... 161
Report State Entomologist 168
Report State Dairymen's Association 176
Report State Beekeepers' Association 224
Report State Vegetable Growers' Association..... 238
Report State Sheep Growers' Association..... 267
Report Secretary Sheep Growers' Association..... 275
Report Implement Dealers' Association..... 288
Resolutions Regarding President Harrison..... 49
Roberts, J. W., Address by..... 110
Rowe, E. H., Remarks by..... 210
Rutlidge, Charles, Remarks by..... 210

S.

Sanger, W. E., Address by..... 146
Siegler, E. H., Address by..... 110
Shaw, S. B., Address by 96
Shaw, E. L., Address by 284
Smith, T. L., Address by..... 150
Smith, James S., Address by 238

Page
Smith, James S., Remarks by 265
Snader, R. Smith, Remarks by..... 211
Sparks, Labon, Remarks by..... 213
Symons, T. B., Reports by 32, 86
Symons, T. B., Remarks by 156, 157
Symons, T. B., Address by 288

T.

Temple, C. E., Address by 240
Temple, C. E., Address by 164
Todd, A. M., Address by..... 262
Towson, A. L., Remarks by.....155, 157, 158
Travers, W. C., Remarks by..... 124

V.

Vincent, Richard, Jr., Remarks by.....38, 161

W.

Walker, W. Irving, Remarks by..... 158
Wheeler, W. A., Report by..... 193
White, Thomas H., Address by 240
White, Thomas H., Report by 260
Wirt, F. A., Address by..... 80
Wolcott, G. E., Address by..... 208
Woods, A. F., Address by..... 38-44
Woods, A. F., Address by..... 189

DO NOT CIRCULATE

UNIV. OF MD COLLEGE PARK
3 1430 04322718 2

DO NOT CIRCULATE